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SANITARY CHEMICALS

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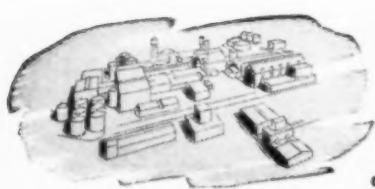
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AS THE EDITOR SEES IT

SHEN we mentioned a couple of months ago that some manufacturers were holding soap off the market in anticipation of the removal of ceiling prices, that they could not then sell laundry soaps except at a loss and would be complete dopes if they did this,—and were quoted to this effect in the public press,—the righteous denials from some quarters of the soap industry were heart-rending. That anybody should state any such thing, or even think such a thought, was just too, too awful.

But the speed with which scarce laundry soap products made their way to retail shelves and store windows following the end of OPA controls was almost miraculous. Like magic, the channels of distribution reopened and soap flowed to market. Of course, this soap was not in warehouse, because nobody was holding soap off the market. It was made by the new post-war high speed process which boils a kettle of soap in 20 minutes, speeds up chilling and drying 10 fold, and runs packaging machinery at no less than a thousand per minute. But, not knowing about this newest wartime development, we were completely misled. And the soapers who told us that they were putting soap in warehouse and would be damned if they sold at ceiling prices, were unquestionably pulling our leg.



SITTING on the sidelines and watching manufacturers of cleaners, soaps and the like almost on bended knees in their efforts to beg, borrow or buy enough alkalies for their needs, we have wondered time and again just where all the tremendous alkali production of the nation is going. The war is over, but caustic soda and ash are scarcer than they ever were. A new plant in the southwest will add another 250 tons

average daily to the country's caustic soda output within a couple of months. Four government arsenal plants will soon add a total of 330 tons per day. But still, there is no caustic to be had by the casual buyer, and this will continue for some months, according to producers' expectations.

Without going into the statistics of the situation, we wonder if a normal peace-time economy can continue to absorb this expanded output of alkalies. When and if the present pace of demand quiets down, what about this tremendous plant capacity not only for caustic, but for a dozen other basic chemicals? What happens if and when Germany re-enters the picture? Ten years ago, caustic soda production of the U. S. was 800,000 tons per annum. Today, it is approximately 1,500,000 tons. Will this be required, for example, five years from now? Those who are building new plants evidently believe that it will.



WITH fats and oils scarce, but prices held in tight rein by OPA ceilings a few months back, thoughts of inventory losses by soapers were as remote as the South Pole. No matter what happened, nobody could lose money on oils and fats bought at ceiling prices. But when ceilings were removed and prices shot upward, the old bugaboo of inventory loss waltzed into the picture deep in the arms of 22-cent tallow. And with a recession of some oil prices from their tops and lower quotations for futures, potential inventory losses to soapers became a subject worthy of more careful thinking and planning.

Even though the world oil and fat supply is held to be far from adequate for some time to come, soapers in general are not buying much be-

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yond immediate requirements at current prices. Looking ahead, the prices quoted futures for lard, linseed oil, soya bean oil and cotton oil, for example,—anything from 10 to 50 per cent off spot prices,—may be a true indication of the trend. Looking back 25 years, we are reminded of one large American soap company that was reported close to the brink of insolvency in 1920 as a result of inventory losses running into many millions. We feel that most soapers are quite conscious of the dangers of the current market as their buying policies would indicate. At the same time, we feel that continued caution should be emphasized once again in spite of the recurring reports that world fat and oil supplies will be short for several years to come. We have heard that one before also!

High fat and oil prices have always had a way of bringing out surprising stocks of materials from every corner of the world. And we still remember that it was but a brief twelve or thirteen years ago that tallow and coconut oil were drugs on the market at price levels below three cents a pound.

users of coconut oil seems quite clear. It should be taken off the statute books at the earliest possible moment.



BASED on the present market for tallow, soap chips should sell for around 25 cents per pound. But there are a few who are and can sell soap chips for much less, in fact eight or nine cents less than this high price. They are the packers and renderers, the lucky ones who control their own fat supplies. Outside of cementing their customer relations, we can see no reason why they should sell at such prices. And we do not have too much faith in the lasting effects of this customer-relation business when the price situation is reversed. According to the economists, if they could sell their tallow for 22 cents and they pump it to their own kettles at 15, they lose seven cents on the deal. But maybe the fight for a stronger position in the soap industry makes this loss worth while. Who knows? In the meantime,—and to the extent of their fat resources,—it would seem that they have the competition over a barrel.

This chip soap market leads our thinking to the price situation which may develop when fats and oils tumble from their present lofty heights. If history is to repeat itself, soap price cuts will come fast on the tail of declines in the fat markets. Soapers have always gone on the assumption in years past that competition has forced their hand in this respect. We doubt the truth of this. Somebody has to start the downward parade. Somebody always has to lead the scramble to send out lower price announcements.

If soapers would look back over the years and recall the ease with which prices may be cut in a declining tallow market and the difficulty in getting prices back up when the trend of fat prices is reversed, we doubt that anybody would be too anxious to be the first to cut a price. Before long, the soap industry is going to face again the situation which it has faced many times over the years,—and almost always with disastrous effects. If it follows the pattern of the past on pricing, the consumption of aspirin over the next few years is likely to be heavy.

WITH the post-war rise in the imports of copra and coconut oil, greater attention is focused on the three-cent processing tax which still clings to this oil like a poor relation. Any purpose which the three-cent coconut oil tax may have served some years back has long since ceased to exist. Prior to Philippine independence, the tax was a subsidy paid to the island government. With an independent Philippines, this has ended and the money goes into the U. S. Treasury for no particular or unusual purpose. The tax today is purely and simply a penalty tax on coconut oil users, a tax without point, without rhyme or reason. If the time should ever come again when the dairy interests of the United States feel that such a tax is needed,—the justice of it, they never seemed to care too much about,—there is nothing to prevent placing their case once more before Congress. But in the meantime, the path which Congress should take in regard to this penalty against the



The original plant of Kranich Chemical Co., predecessor to Kranich Soap Co. This plant was located on Ninth Street in Brooklyn. Herbert Kranich, head of the company, is also president of the Potash Soap Association.

Kranich Soap Company - 1921 to 1946



JUDGING from the size of major soap companies, the Kranich Soap Company of Brooklyn, is a small organization. However, it is a highly successful one and the completion of its first twenty-five years of continual growth finds it solidly established as a supplier specializing in potash soaps.

Organizations must have something "on the ball" to weather the formidable competition offered by the big companies of today, and in the case of the Kranich Company, that something special lies in the personality and policies of its founder and president, Herbert Kranich. Mr. Kranich has developed his business around the idea of buying cheap grades of raw materials and, by the use of low cost, modern process practice, cleaning and upgrading the materials to a point where they are useful as ingredients for

his many specialty products. Examples of low cost processing to up-grade raw materials have been pointed out in the past ("Garbage Grease for Soap," *Soap & Sani. Chems.*, Oct. 1946 p. 77), and the major soap-makers by no means have a monopoly on such practice. It is part of the Kranich policy that the plant be equipped with modern machinery and equipment adequate for doing the job. Many examples of Kranich machinery and plant lay-out are shown in the accompanying photographs.

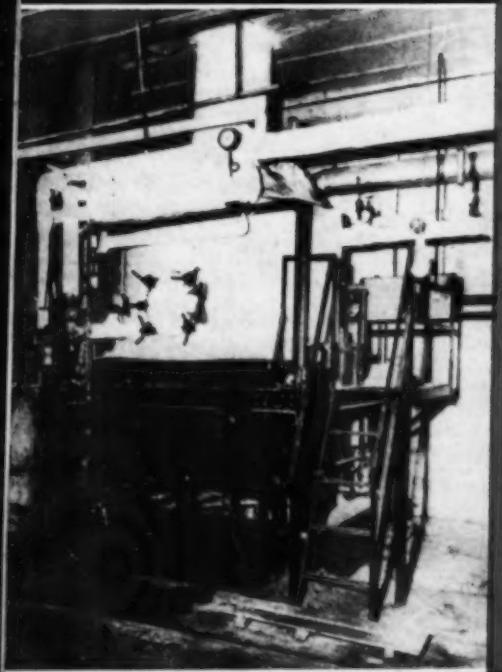
The Kranich Chemical Company was formed November 1921 for the manufacture of potash soap specialties. Its small factory of three thousand square feet was originally located at 115 Ninth Street, Brooklyn, New York, on the banks of the Gowanus Canal. Within a short period of three years, this original plant was inadequate to take care of the expanding

business, so in order to obtain extra needed factory space and also to strengthen its outlets of distribution, a merger was effected with the old established Specification Soap and Oil Company which had been originally founded about 1890, and was known as the New York Soap Works of West Street, New York. The merger was not successful during the period 1924 to 1928, and in order to effect a reorganization that would permit the business to grow, Mr. Kranich bought out the two active partners and also purchased the interests of several other stockholders. In 1928 the name of the firm, Kranich and Specification Soap Company was changed and shortened to its present name, Kranich Soap Company.

At this time, Mr. Kranich organized the Lavan Realty Corporation, of which he is sole owner and president and which, through the years, has acquired the factory space (now approxi-



Upper left: Powdered castile or coconut oil soap in tray driers being dried to about 98 per cent anhydrous soap at the Kranich Soap Company plant in Brooklyn, New York. At right foreground is hopper for feeding dried soap to the floor below.



At left is a fatty acid still. Note type of insulation designed to reduce the loss of heat to a minimum.



Lower left: Filtration room, showing two, 15,000 pound refrigerating tanks and special, closed delivery, 36 inch plate and frame filter press of 50-drum-per-day capacity. Filtration and refrigeration are considered vitally essential in modern manufacture of shampoos and liquid soaps.

mately 40,000 square feet) needed by the parent company. In the midst of the depression, a new building of twelve thousand square feet was erected to provide for the installation of new and modern soapmaking equipment. The beginning of the world war required further expansion and additional yard and storage facilities were provided.

When interviewed recently, Mr. Kranich stated that during the past 25 years, methods of manufacturing potash soaps have been improved by technical research and also by plant and equipment design so that today customers are assured of not only better quality but also of greater uniformity of potash soap products. Some of the improvements are refrigeration; better and newer type of filtration for liquid soaps; production of specially formulated purified fatty acids by the installation of a high vacuum distillation unit; oil-splitting equipment to recover glycerine; and oil refining of crude vegetable oils.

HERBERT KRANICH was born September 7th, 1894. After graduating from Manual Training High School in 1912, he decided that a career in his grandfather's piano business (Kranich & Bach Piano Company) would not gratify his yearning for science and a subsequent business career. In order to follow his inclinations regarding his education and future business career, he doubled up early in life, working days as a junior chemist and pursuing his chemical education studying nights. After 8 years of effort, with World War I intervening for a short period of time, he graduated from Brooklyn Polytechnic Institute in 1920 with a Bachelor of Science degree in Chemistry. Among his many early positions, the first in the soap industry (1915) was one as an assistant chemist in the laboratories of Kirkman & Sons, N. Y. Later he was chief chemist and superintendent of the Harral Soap Company, N. Y., before embarking on his own business venture. During World War I, he was a commissioned officer (Second Lieutenant) serving as a chemist and inspector in the U. S. Government central testing laborato-

ries in the high explosives division of the ordnance department. As a chemist, he holds numerous chemical patents on cellulose, alcohol and soap. He has also published technical papers and has written numerous articles of general interest to potash soap makers.

He is a member of the American Chemical Society, a fellow in the Institute of American Chemists, a member of the American Oil Chemists Society, the Salesmen's Association of the American Chemical Industry and the Association of American Soap & Glycerine Producers, Inc. He was vice-chairman of the potash soap division of the Association for two years and its Chairman for the years 1945-1946, and also has served as a Director in that Association for the year 1946. He was instrumental in the organization of the Potash Soap Association in Cleveland, October 1946, and was elected interim president of the new association.

Looking to the future, Mr. Kranich feels that the potash soap industry, which has grown from some thirty or forty participating firms with a capital structure of about five million dollars to about one hundred fifty firms with a capital structure of thirty to thirty-five million dollars during the past twenty-five years, needs:

1. Improved formulation of product.
2. Certification of product.
3. Development of mechanical dispensers to facilitate use of potash soaps in household.
4. Effective product advertising and publicity.
5. A strong Potash Soap Association to serve the needs and requirements of the members in the industry.

His son, Herbert Kranich, Jr., who is attending Drew University, Madison, N. J., has just celebrated his twentieth birthday. Upon graduation, he plans to join his father in the business.

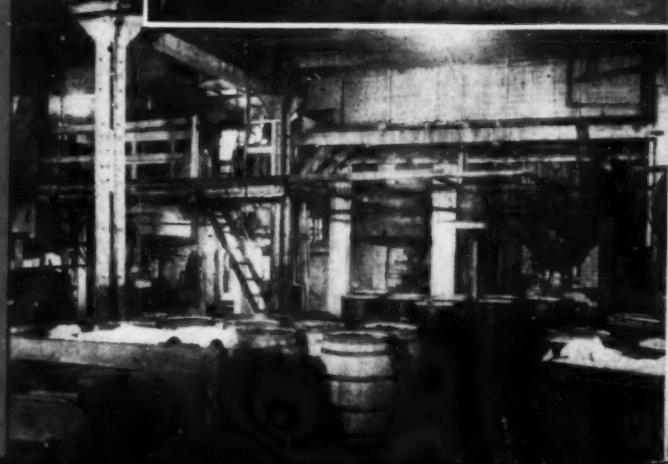
One record the firm is particularly proud of is its small turn-over in employment. Among those who have been with the company 20 years or more are Mr. Kranich's father, Augustus Kranich; Bert Young, plant superintendent; Arthur Suprenent, a salesman, and William Carter, who is in charge of shipping.

Right: Cooking kettles of 100,000 pounds working capacity where pine scrub soap and shampoos are boiled and settled. Smaller lead-lined vertical tank in right background is used for splitting off fatty acids from raw oils prior to distillation operation.

Right: Treatment kettles (background) of 80,000 pound capacity are equipped with refrigerating coils and used for second stage shampoo processing before filtration.

Pulverizer and cyclone type filler (at right) produce dry powdered soaps, 95 per cent of which is 200 mesh.

Lower right: Main kettle room, showing two, 6,000 pound crutchers (partially blocked from view by platform and ladder in left background) and two, 30,000 pound soap boiling kettles in center and right background.



Private Brand Toilet Soaps

a survey of the market and analysis of the effect that the fat and oil shortage has had on sale of such soaps



NE of the unforeseen by-products of the soap shortage is the new and heightened regard that the American housewife now holds for what was once considered "the lowly bar of soap." This new attitude is particularly apparent with regard to private brand soaps. Although private brand soaps are made up in about the same categories as nationally advertised brands, the preponderance of private brand soaps in the higher-price better-quality range is evident. Thus, when the five, seven, 10 or 15 cent nationally advertised, volume-sales soaps began to disappear from grocers' shelves in the throes of the soap shortage, it was only natural that the housewife began to show a considerably increased interest in the higher price, gift type soaps for everyday use. This new experience with quality soaps has opened new marketing vistas for the seller and in a short space of time has accomplished a sales job that under normal merchandising methods would have taken years. Scarce soaps took on an added attraction and became very useful gifts, particularly when they were surrounded

by lush packaging appointments. The result has been a substantial increase in the demand for private brand, better quality soaps with which the supply has not been able to keep pace.

Given this set of circumstances, it might have been expected that manufacturers of private brand soaps would have diverted substantial amounts of their scarce fats and oils from their own nationally advertised low-cost brands into the more profitable premium-priced private brand lines. The companies affected, however, deny that any such diversion has taken place, at least in any abnormal amount. For the past several years most manufacturers of private brand soaps have been in the position of being unable and unwilling to take on any new accounts. Several companies, as a matter of fact, report that they have discontinued their private brand operations entirely during the period of fat and oil shortage. On the other side of the picture, firms buying private brand soaps report that they have not been able to obtain enough soap to supply their needs.

What is the volume of the market for private brand soaps? On this

question all manufacturers seem to share an equal reticence. In the absence of any impartial official figures, a recently published estimate of 10 per cent of the total soap dollar volume is the only yardstick of the market available. However, that figure seems a little high, and probably should be closer to 5 than 10 per cent. Another difficulty in attempting any sort of a breakdown on the market stems from the fact that quite often the private brand soap is part of a gift box that contains a number of other items that are related in only the loosest sort of way.

Private brand soaps are bought from soap manufacturers in the main by the following three groups: individual stores or chains that have soap made carrying their own name; groups of stores that are affiliated with other stores by having common central purchasing offices, such as the Associated Merchandising Corp., Affiliated Merchandising Corp., Cavendish Trading Corp. and Arkwright Merchandising Corp.; all of New York; and toilet goods manufacturers who buy soap with their own name on it to round out their lines. A fourth classification,





which might seem rather to be a subdivision of one or more of the three principal classes listed above, is the export market. Manufacturers were able, all through the war years, to make and sell soap for export on a quota-free basis. In the export market soaps are normally made and shipped either with the name of the purchaser or with a name suggested by the manufacturer, although he is not associated or identified with subsequent sale. One manufacturer who makes this sort of soap for export has a white and green soap with standard names. The soap is individually wrapped and packaged for sale at wholesale or retail by the purchaser.

Large chain stores of the grocery type and large department stores, sometimes having one or more affiliated suburban or out-of-state units, are usually large buyers and sellers of private brand merchandise. A department store like Macy's or Gimbel's can go to a manufacturer and offer him a large volume outlet for his product provided he is willing to put the store's or chain's individual label on the merchandise. Such an arrangement offers certain tempting economies. While the

manufacturer loses his own product identity, it is not necessary for him to advertise widely to build up his sales. As a result, he saves on the cost of advertising, and through increased volume sales he reduces unit cost by increasing volume. With an assured market for his product he can pass along some part of his savings to the store for which he is manufacturing the private brand soap.

The store in turn will "work closely" with the manufacturer and promote his item with interior and store window displays, advertising, etc. The store, or purchaser, thus promotes its own name and generally is able to sell the private brand product at a lower price than nationally advertised

brands, price-fixed or otherwise. Even though underselling competitive products the store or chain can increase its profit on the item by being able to purchase it more cheaply than nationally advertised brands that require extensive advertising, sales forces, etc. Private brand products may also be sold as "loss leaders." Chain grocery stores sell complete lines of private brand soaps, while department stores sell "their own" brand facial, hand, bath soaps, some flakes, diverse cleaners, etc.

Department stores, drug stores and specialty shops normally sell private brand soaps alone, in units of three or more cakes, or as parts of ensembles which are produced by nationally known firms, usually toilet goods or cosmetic manufacturers. Private brand soaps, incidentally, seem to differ from other types of private brand merchandise in that there are two kinds of private brand soaps. There are those that are bought and sold by stores under the store's own name, and those that are bought by a nationally known manufacturer or distributor under his name and then resold in turn by a retail store. Both stores and nationally known manufacturers or distributors who buy private brand merchandise for resale register the trade names of the private brands.

Another type of purchaser of private brand merchandise is the buying office. Because of their close relationship to the retail merchandising field, their operations closely resemble or are identical with the retail store's method of handling private brands. The buying office, in most cases, can offer larger volume of purchases and sales than any of the individual stores which are members of the organization. In order to effect the economies of mass production, the brand name of

**Present day market conditions
receptive to influx of many new
private brand, premium toilet
soaps in attractive packages**

the purchasing office, rather than of the individual store is used. Thus, "Amcee," the brand name of Associated Merchandising Corp., is used by stores which are members of the AMC organization.

NATIONALLY known and advertised toiletries firms, making lines for both men (shaving accessories, etc. and women, like to have soap as part of their lines for completeness. As a result, rather than go into the specialized business of manufacturing soap for their own quite limited needs, they find it easier and more economical to buy soap from a firm that manufactures it.

The first thing to be done is to have a designer work out an appropriate design(s) for the desired soap. In designing the soap, care must be taken to see that the finished model conforms closely to weight specifications. In general, private brand soaps come in two sizes: $3\frac{1}{2}$ to 4 ounces and 6 or 7 ounces. Private brand soaps run a fairly wide gamut of shapes, varying from an oblate spheroid to a shield design. Decorative scrolls and lettering on the soap must be sharp and distinct, designs varying to conform with correlated toiletries items. For example, Harriet Hubbard Ayer makes a "Pink Clover" line of toiletries. The soap, roughly square in shape with rounded edges, carries a clover design. As part of a gift box containing bathsheen, bath powder and cologne, the soap is perfumed with the same odor as the other items in the set. That four piece set, incidentally, retails for around \$4. In addition to the fragrance of the soap, another important consideration is its color. Private brand set soaps vary in color from line to line. That is, the "Pink Clover" soap, mentioned above will have a different color from the other different Harriet Hubbard Ayer sets. Color is important to the housewife, who likes her soap to match her bathroom color scheme.

As in the case of the general appearance of the soap, the odor or perfuming is normally decided upon by the purchaser. In many cases, the purchaser of the private brand soap furnishes his own perfume. The fragrance is tested with the soap stocks of the manufacturer in the toiletries firm's

laboratory until a satisfactory fragrance is chosen. The method of selection of the perfume is purely empirical, according to one toiletries manufacturer, although over the years an experienced perfumer can tell fairly well how closely a given perfuming material will approximate the desired odor in a soap.

In connection with the perfuming of soaps, an interesting sidelight is furnished by the method of choosing a scent for the soaps of the McKelvy line of men's toiletries. After a great deal of preliminary testing was done, the company narrowed the field down to nine odor combinations. Then, to ascertain which one would appeal most to the potential market, the firm arranged with a telegraph company to place the odors, labeled with a key letter, in several large receiving offices. Men sending telegrams were asked to indicate their choice. The firm chose telegraph offices because it felt men who could afford to send telegrams could afford to spend a dollar for toiletries. The result of this poll of several thousand potential customers gave one odor a vote greater than all eight other odors combined, and that odor became "Seaforth."

Continuing research, particularly on perfuming materials, is conducted by the larger buyers of private brand soaps. Tests are conducted with various different odor combinations, and particular attention is paid to the problem of oxidation, which causes soap discoloration. In addition to the laboratory facilities of toiletries firms, large retail organizations such as R. H. Macy & Co. maintain "Bureau of Standards" laboratories, etc. They run extensive tests on private brand soaps that they buy, and test the soaps against specification requirements which they set up.

In general, private brand soaps present problems with which the manufacturer of nationally advertised brands is not faced. One of these problems is that of the necessarily shorter runs of the private brand soaps. As a rule the standard order for private brand soaps is about 100 gross. This in turn can be divided by the number of col-

ors the order calls for, which is usually four. As a result much of the soap press time is consumed by stops to clean up the dyes and prepare to run a different color, sometime substituting different dies, etc. In some cases private brand soap manufacturers buy soap bases, add the perfume supplied by the purchaser, cream compound, cold cream or such superfatting agents as lanolin, cetyl alcohol, cocoa butter, spermaceti, etc.

In the main, private brand soaps are a good grade, tallow soap, usually with coconut oil added to produce plentiful lathering. The so-called hard water soaps, which are one of the big private brand sellers in department stores, rely pretty heavily on coconut oil for their lather ability. The shortage of coconut oil during the war, as a result of the Japanese occupation of the Philippines and the Netherlands East Indies, did not seem to diminish appreciably the visible supply of hard water soaps in department stores. Other oils, whenever available, were substituted for coconut oil and tallow when shortages of these raw materials were particularly acute. Olive oil and palm oil, two private brand soap favorites—when available—were on the soap supply casualty list during the greater part of the war. With the United States going back into the "net importer" column on the fats and oils report sheet during the coming year, private soap manufacturers should have an easier time of it. In fact, they should begin to expand a market which private brand soap manufacturers and sellers feel has a great future.

As a result of the removal of price ceilings on both soaps and the raw materials entering into their manufacture, prices of private brand soaps to the re-seller have about doubled in the past few weeks. The price from one supplier has advanced from \$4.87 to \$9.90 a gross for three and one-half ounce cakes. One manufacturer of private brand soaps reports that he had been losing money in this department until price ceilings were removed. Only in the last few weeks, he states, has his private soap department shown any sort of profit. The increase

at the manufacturing level can easily be justified by such random price increases as an estimated six-fold advance in the price of perfuming materials, as compared with pre-war; 22 cent talc, and a coconut oil fatty acid price of 33 cents, as against a ceiling price of 17 cents.

Since there is quite a sizeable margin between the manufacturer's price and the retail level on better grade toilet soaps, these soaps have not advanced much if at all at retail, the seller absorbing the advance. The cost of high priced private brand soaps is estimated by one source to be only about 10 percent of the retail selling price, and with this kind of a margin it would of course be possible to absorb a substantial advance in cost.

Although a great deal has been said about the advantages of manufacturing and selling private brand soaps such as practical elimination of advertising costs, assured volume, etc., there are some noteworthy disadvantages. In the first place, the manufacturer who specializes only in the manufacture of private brand soaps buries his identity as far as the buying public is concerned. This means that no matter how good a product he makes someone else will receive the credit for it. If quality of product and the "right price" were the only considerations moving buyers in their choice of a product, lack of manufacturing identity would not be important. However, one of the "occupational hazards" of a buyer's position is turnover, and as new buyers take over, old sources of supply are sometimes discarded in the shuffle.

A strong factor opposed to the expansion of private brand operations is the existence of Brand Names Research Foundation. The avowed purpose of this organization is to sell the consuming public on the advantages of nationally advertised brands of merchandise. It is made up, as might be supposed, of manufacturers of products sold and advertised nationally under the name of the manufacturer. Since it has access to the biggest names and the best brains in the advertising, promotion, merchandising and public relations fields, it is a live, aggressive

organization that has very definite ideas of what it wants to do and the knowledge and experience with which to do it.

Apart from the factors outlined above threatening the growth of private brands, all of which can be counteracted, incidentally, by thoughtful business planning, private brand soaps would seem to have an important and profitable place in the industry and one which will expand during the coming years under skillful merchandising.

In a field where competitive standards tend to make product quality and price fairly uniform, friendliness, sales ability, price cutting and

other factors affect the buyer's choice of a source of supply. As a result, if a manufacturer allows his productive output to become dependent on one or a few buyers, he jeopardizes the security of his organization, since losing one customer may force him out of business. In normal times when the buyer holds the upper hand in the sales transaction, he often expects his buying cost to be reduced from year to year. Unless a private brand manufacturer has a number of accounts, he is liable to find himself the victim of slow economic strangulation under the inexorable law of diminishing profit returns.

Dahl Fund Drive Head

N. S. Dahl, sales manager of Stanley Soap Co., New York, has been appointed to direct the 1947 fund raising drive for the National Foundation for Infantile Paralysis in the soap industry in the greater New York area.

Robt. Wilson Leaves Dow

Robert L. Wilson, who has been connected with the New York office of Dow Chemical Co. for the past 22 years, will shortly join Wilson Export & Import Co., New York, as vice-president. President of the company is Burton Wilson, who had been connected with the National Aniline Division of Allied Chemical & Dye Corp. for a number of years in their overseas department before starting his own company several years ago.

Emulsol Announces Changes

Emulsol Corp., Chicago, announced recently, following a meeting of its board of directors, the election of two new vice-presidents. M. H. Joffe was elected vice-president in charge of sales and B. M. Shaffer, vice-president in charge of new products development. Mr. Joffe is a graduate in chemical engineering of the University of Illinois and has been with the company since 1930, while Mr. Shaffer, who received his degree in chemical engineering from Toronto University, joined the organization in 1926. In addition, the company announced the in-

stitution of an extensive research program in the new products development department.

A. Delavigne: Oil Man, Dies

Albert Delavigne, 60, president of Roure-Dupont, Inc., New York, essential oil firm, died Dec. 30, at his home, 1220 Park Ave. A native of Paris, he was a captain in the French Air Force in the first world war. Mr. Delavigne first came to the United States 26 years ago as manager of George Silver Import Co., which at that time represented Roure-Dupont in New York. Six years later he became president of the company he headed when he died.

Amer. Can Appoints Jewett

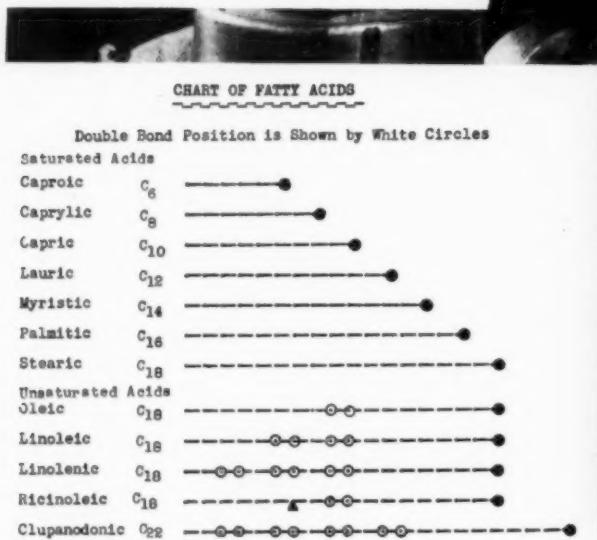
F. G. Jewett, formerly assistant manager of sales in the Atlantic division of American Can Company, New York, was recently named manager of sales promotion of the company with headquarters in New York. Mr. Jewett joined American Can following his graduation from Yale in 1916.

MM&R Appoints Taxier

Magnus, Mabee & Reynard, Inc., New York and Chicago, essential oils and aromatics, have named Charles B. Taxier as sales representative in New York State, exclusive of New York City. Previously Mr. Taxier had been a sales representative in the metropolitan area.

INDUSTRIAL SOAPS

By John W. McCutcheon*



SOAPS are frequently composed of mixed fatty acids and bear the name of their derived oil or fat, such as coconut oil soaps, high titer tallow soaps, fish oil soaps, cottonseed oil foot soaps, castor oil soaps. Or they may be grouped by their metal cation such as the sodium or hard soaps, the potassium or soft soaps, the metallic soaps, etc. To unravel these interrelated groups it is necessary to simplify our methods of thinking into terms of individual fatty acids. For example four analyses of oils and fats below are broken down into the typical per cent composition of their fatty acids in round numbers. The numbers across the top representing the number of carbons in the chain.

Coconut oil composition centers on the C₁₂ and C₁₄ saturated acids, Tallow on the C₁₆ and C₁₈ saturated and C₁₈ monounsaturated acids. Linseed is practically all C₁₈ unsaturated, while menhaden is widely spread from C₁₄ to C₂₂ and highly unsaturated.

The above chart diagrams the chemical constitution of these acids and shows the regular way in which the unsaturated acids oleic, linoleic and linolenic are formed from stearic. Not more than three double bonds are conveniently prepared by nature without lengthening the chain. In this respect it is interesting to note that an animal fed exclusively on a stearic acid diet will tend to meet its unsaturated fat requirements by

In general, the type of acid and the balance between saturated and unsaturated fatty acids in any one body is controlled by a mechanism more or less specific for the animal in question so that tallow from cattle of the Argentine closely resembles that from Texas.

A few other acids of commercial importance are the hydroxy ricinoleic acid of castor oil and conjugated eleostearic acid of tung oil, the importance of which lies chiefly in fields outside the soap industry.

All these acids are colorless if pure. If the soap making qualities of the saturated acids are examined, it is found that, at a particular temperature, one may be picked out which will lather best. Lauric appears to be superior at room temperature. In lukewarm water, myristic appears best and at 160° F. palmitic and at 180° stearic. The explanation for this is as follows: soaps are colloidal electrolytes, which is just another way of saying they are half in and half out of solution. They are not dissolved like salt, nor in suspension like sand and water. These small particles or micelles are groups of probably 5 to 20 molecules, the size of the micelles de-

TABLE I
Typical Fatty Acid Composition of Three Oils and One Fat

	Saturated Fatty Acids						Unsaturated Fatty Acids					
	C ₆	C ₁₀	C ₁₂	C ₁₄	C ₁₆	C ₁₈	C ₁₀	C ₁₂	C ₁₄	C ₁₆	C ₁₈	C ₂₀
Coconut Oil	8	7	48	10	9	2			7	1		
Tallow				6	28	20			44			
Linseed Oil					6	3			19	24	48	
Menhaden Oil				6	16	1	15		30		20	12

*Before Nat'l. Assn. Insecticide & Disinfectant Mfrs., New York, Dec. 2, 1946.

desaturating the acid. Likewise if fed all oleic, some stearic will be formed.

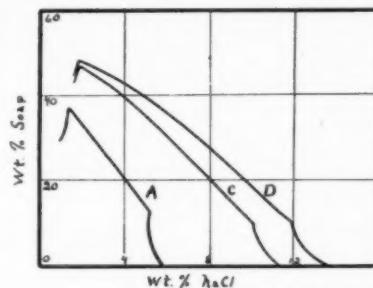
pending on the concentration of the soap in the solution. The maximum washing power appears to exist for any one soap at the point where the micelles are the largest in number and smallest in size. This point is probably close to the temperature gradient for true solution and at a concentration low enough to prevent the formation of large micelles. Thus, for example, sodium palmitate at a concentration of 0.2 per cent and a solution temperature of 160° F gives maximum lathering and detergent power. Raising the temperature increases the solubility, decreases the number of micelles and lowers the soap's efficiency. Decreasing the temperature precipitates the soap, forms larger micelles and also decreases the efficiency. In the same manner, decreasing or increasing the concentration may be shown to similarly decrease efficiency. It is well known for example that concentrations of 0.3 per cent and 0.4 per cent soap in laundry solutions tend to cause the loosened dirt to redeposit on the fabric.

In the examples to be discussed, the concentration has been held constant at 0.008 molal for purposes of comparison. Each soap differs from its neighbor by $-\text{CH}_2-\text{CH}_2-$. This is part of the hydrocarbon chain. It is the "water shunning" or hydrophobic part of the chain. A reduction in its size increases the influence of the carboxyl group, the "water-loving" or hydrophilic part of the chain. Such change increases the solubility of the soap so that it lathers best in colder water. Thus sodium myristate and sodium laurate, the backbone of the coconut oil soaps, are known as cold water soaps.

Below a chain length of C_{16} the soap making properties of the acids fall off abruptly. In like manner sodium stearate is more insoluble than the palmitate and lathers best in hotter water. Further increases in the chain length such as to arachidic (C_{20}) and behenic (C_{22}) acids reduce the solubility of the resultant soaps so far that for ordinary temperatures of washing they are of little value. Soaps prepared from hydrogenated fish oils

would therefore have inferior washing properties even when the hydrogenation was carried out to a point where there was little danger from rancidity or odor development.

ANOTHER property of the soda soaps that is closely associated with their solubility and chain length is their salting out properties. The more soluble and shorter chain acids such as lauric require a higher salt concentration for this purpose, a fact well established in kettle room practice. Such soaps are less affected therefore by weak brine or sea water and are sometimes called salt water soaps. This is well illustrated by the work of McBain, Vold & Jamieson (*J.Am. Chem. Soc.* 61,307 (1939)) part of whose data is given below:



Curve "A" represents the phase diagram for the salting out of sodium palmitate at 90° C. In Curve "D" for sodium laurate the per cent salt requirements are almost double. Curve "C" represents a 50/50 mixture of these soaps. It is important to observe that it does not lie midway between the first two. This abnormal behaviour reaches its maximum with binary mixtures and is prevalent throughout the whole chemistry of the fatty acids and their derivatives.

Another property, very important in considering soaps for toilet and cosmetic use, is their physiological effect on the skin. In general, the longer the chain the more firmly bound is the substitute group. This is manifest in many ways—for example the esters of the higher fatty acids are more easily formed and less easily hydrolyzed than their lower homologues. The ionization constant decreases steadily as the chain length increases. A few values from the literature

(Dippy, *J.Chem. Soc.* 1222 (1938)), illustrate this point.

Normal Chain length	Ionization Constant $\times 10^{-5}$
C_4	1.50
C_6	1.38
C_8	1.32
C_{10}	1.28
C_{12}	1.27
C_{14}	1.11

Myristic acid and its derived soaps are known to be mild on the skin and are well liked in the cosmetic trade. The skin irritation of coconut oil and its soaps is usually attributed to the presence of capric and caprylic acids, (*Blank H.I. Arch. Dermatol. Syphilol.* 39 911-24 (1939)) Pelikan K.A. *Soap Per. & Cos.* 11, 1018 (1938). Other physical constants are similarly affected by chain length. A typical example is the melting points of the ammonium acid salts and the lead salts.

Table of Melting Points

Carbon Chain Length	Ammonium Acid Salts ¹	Lead Salts ²
C_4	54°C	83
C_{10}	68°C	96
C_{12}	77°C	104
C_{14}	84°C	110
C_{16}	89°C	113
C_{18}	93°C	115

¹ Kench, J. E. and Malkin, T., *J. Chem. Soc.*, 230-2 (1939).

² Piper, J. D., Fleiger, A. G., Smith, C. C., Kernstein, N. A. *Ind. Eng. Chem.* 31, 307-17 (1939).

The effect of introducing a double bond into the chain, increases the solubility, lowers the surface tension, and decreases lathering qualities and detergency. Oleic acid stands about half way between lauric and myristic in its physical properties including detergency. It is less resistant to hard water than stearic (Skirokar, G. V. and Venkataraman, K. J. *Soc. of Dyers and Colorists*, 56, 503-7 (1940)). When an hydroxyl group is also introduced into the chain along with an unsaturated bond, as is the case for ricinoleic acid from castor oil, solubility is still further increased and detergency falls off abruptly. Such an acid is difficult to salt out. In work's practice this problem does occur with hydroxy acids formed by the partial oxidation of unsaturated double bonds and may be the cause of much foaming in the glycerine recovery process if not handled well in the treat. Substitutions and double bonds increase the ionization constant but no men-

tion is made in the literature that this is hard on the skin.

Unsaturation in an oil of course, has an effect on the derived soap other than the physical effects studied so far. The soap may turn rancid, develop odors, split, or form soluble hydroxy acids, etc. Preservatives can assist in modifying such decomposition, while the presence of certain metal impurities such as copper can hasten it. The answer to this problem is to reduce the unsaturation if possible to the oleic stage by hydrogenation before or after making the soaps. One double bond present is not objectionable as testified by the stability of olive oil soaps.

WHEN the cation is changed as from sodium to potassium, an entirely new type of soap is formed. It is like moving up or down an octave on the piano. Potassium soaps for example are very soluble, very mild and cannot be salted out. Each other type of cation such as ammonium, lithium, copper or lead imparts its own special properties to its members of the series. However, the variations of the fatty acids through all the vicissitudes of the metals, still exert and influence the characteristic properties in the same way.

The normal increase of the melting points of the lead and ammonium soaps indicate this. Although we cannot speak of the detergency of lithium stearate as we can for sodium stearate, it is still possible to apply the same reasoning to the problem as to which acid might be the most effective constituent in a lithium soap for grease. Therefore it is seen that the properties of soaps may be modified by the manipulations of the hydrocarbon tail, lengthening it, shortening it or by introducing solubilizing groups, or secondly by recapping the head with a new cation. General principles developed have shown the relationship between solubility and temperature in respect to detergency. The effect of substitutions has been mentioned. Correlating these principles should provide some indication of trends. For example, hydroxy lauric acid should be a skin irritant, hydroxy behenic, a useful detergent. It should

Debate U. S. 1947 Fat Needs

NO final decision seems to have been reached yet as to just what portion of world fat and oil supplies will be allocated to the United States in 1947 by the International Emergency Food Council. At its recent meeting the Council was reported to have fixed quotas only for the first quarter of 1947, during which the United States is to import 240,000,000 lbs. of fats and oils (principally copra, coconut oil and linseed oil) and to export 138,000,000 lbs. (lard, soybean oil, shortening, margarine and soap.)

Before the end of the first quarter the Council was expected to reach a decision as to the split-up of world fat supplies for the balance of the year, although there always remains the possibility that the United States may decide not to continue its representation on this world board after Mar. 31. The 2nd War Powers Act, which empowers our membership on the IEFC, will lapse at this time unless action by Congress is taken to continue these wartime controls.

On the basis of the first quarter set-up, the United States would be on an annual import basis of approximately 400,000,000 lbs. for the entire year. This compares with our export status during 1946 and the previous war years. In 1946 we imported 790,000,000 lbs. of fats and oils and exported 821,000,000 lbs., on the basis of IEFC estimates. Prior to the war we normally imported a billion and a half pounds of fats and oils annually.

In advance of the meeting of the International Emergency Food Coun-

cil, a conference was held in Washington early in December attended by representatives of the Departments of State, Agriculture and Commerce, as well as representatives of fat and oil consuming industries. The Department of State took the position that to bolster our prestige abroad the United States should not ask for more fats and oils in 1947 than in 1946 when we got by on approximately 38.5 lbs. per capita of edible oils and 23.2 lbs. per capita of inedible oils. This position was supported by the Department of Commerce, but was directly opposed by the Department of Agriculture which asked for a substantial increase in American supplies of fats and oils in 1947. They asked for a minimum of 40 lbs. per capita of edible oils and 24 lbs. per capita of inedibles, which on the higher population basis of 1947 (143 million as compared with 141.9 in 1946) would amount to a considerable increase in American fat and oil requirements.

While recognizing the great need for fats and oil abroad, representatives of American fat and oil consuming industries argued that United States should be allowed to increase its imports, not only for the food needs of its larger population, but also because of increased industrial needs, and world dependence on American industrial output. The importance of increased supplies of soap making oils, so that soap production can be boosted substantially, was particularly emphasized.

be possible to water solubilize the heavy metal soaps with alpha substituted polar groups. It is conceivable that such compounds might be useful detergents in their own rights without causing lime soap precipitation.

Rules Oil Duty Free

The United States Court of Customs and Patent Appeals recently ruled in favor of a large soap manu-

facturer and importer of Ceylon citronella oil containing a small percentage of kerosene, the usual adulterant. Ruling the case one of contamination, the court declared the oil duty free under paragraph 1731 of the Tariff Act of 1930, rather than allowing the adulterated oil to be taxed, as allowed under paragraph 60, at the rate of 30 per cent plus 40 cents per pound applicable to perfume materials not containing over 10 per cent alcohol.

Soap Industry Meetings

SOAP makers were scheduled to meet in January in two important industry gatherings—the first annual meeting of the newly formed Potash Soap Association, which was to be held at the Hotel Cleveland, Cleveland, Ohio, January 14th, and the annual meeting of the Association of American Soap and Glycerine Producers, scheduled for January 22nd at the Waldorf Astoria, New York.

The program for the initial meeting of the Potash Soap Association, as announced by Herbert Kranich of Kranich Soap Co., Brooklyn, temporary president, and Andrew P. Federline secretary, was as follows:

Address of Welcome by President Kranich.

"Uniform Cost Accounting as an Aid to Business Management"
by Thomas W. Howard, manager, Department of Manufacture, Chamber of Commerce of the United States.

"How to Forecast Fat and Oil Supply from Current Crop Reports"
by Robert M. Walsh and Edgar L. Burts, Bureau of Agricultural Economics, U. S. Department of Agriculture.

"The Value of Advertising and Publicity to the Potash Soap Manufacturer"
by Ira P. MacNair, Publisher of "Soap and Sanitary Chemicals"

Symposium on Supply and Demand Outlook for—
(a) Fats and Oils
(b) Caustic Potash
(c) Alkaline Salts
(d) Steel Drums and Tin Cans
(e) Glass Containers
(f) Cartons and Shipping Containers

Luncheon

"What Congress and the Executive Departments Can and Are Doing to Help Small Business"
by Honorable Estes Kefauver, United States House of Representatives.

Afternoon Session

Business Meeting
Reports By:
President
Treasurer
Chairman of Membership Committee
Chairman of Program Committee
Nominating Committee

Election of Directors (12) for 1947
Round Table Discussion
Election of Officers for 1947
Cocktail Party and Buffet Supper



R. R. DEUPREE
Procter & Gamble Co.
President, AASGP

THE annual meeting of the Association of American Soap & Glycerine Producers was originally to have been held on January 15th, but subsequently a change in date to January 22nd became necessary. The program for this meeting, as announced by Roscoe E. Edlund, secretary and manager of the association, departs sharply from the practice of previous years. Instead of offering a set program of talks by association officers and government officials, it was planned to conduct an informal "round table" discussion of a number of questions suggested by members of the association to be most in need of clarification.

Subjects receiving the greatest number of votes up to press time and upon which the discussions will likely center are: the general business outlook for 1947 with emphasis on the supply situation for fats and oils, glycerine, and caustic soda, as well as for packages and containers; and what the synthetics are, what they can be used for, present status in the market, relationship to soap and glycerine, and outlook. Problems raised by the "portal-to-portal" wage decision may be brought into discussion.

A portion of the round-table discussion is expected to be devoted to sounding out the members feelings about their Association and how it can render better service to the industry.

The Association will elect 15 members to the Board of Directors for 1947. A slate of nominees prepared by the nominating committee and sent out to the members includes the following: New names nominated: L. J. Evans, Iowa Soap Co., Burlington, Iowa; V. Levinson, J. Eavenson & Sons, Division of Wilson & Co., Camden, N. J.; C. D. Poland, Poland Soap Works, Anniston, Alabama; W. F. Straub, Antiseptol Co., Division of W. F. Straub & Co., Chicago. Renominations are: T. E. Allen, Par Soap Co., Oakland, Calif.; N. S. Dahl, John T. Stanley Co., New York; R. R. Deupree, Procter & Gamble Co., Cincinnati; H. Dock, M. Werk Co., Cincinnati; D. M. Flick, Armour & Co., Chicago; C. G. Fox, Fels & Co., Philadelphia; E. B. Hurlburt, J. B. Williams Co., Glastonbury, Conn.; E. H. Little, Colgate-Palmolive-Peet Co., Jersey City; Charles Luckman, Lever Brothers Co., Cambridge, Mass.; E. A. Moss, Swift & Co., Chicago; and G. A. Wrisley, Allen B. Wrisley Co., Chicago. Other nominations may be made in writing at the meeting or in advance. All directors are elected for one year.

At this 20th annual meeting, the Association of American Soap & Glycerine Producers acts as host to the industry as it had done in the past. The meeting starts at 9:30 A.M. and all soap manufacturers are urged to attend the luncheon whether they be members or non-members of the Association.

At the close of the regular meeting, the new board of directors will meet to act on plans for the coming year.

RAW MATERIALS

FOR THE SOAP AND ALLIED INDUSTRIES

TALLOW

RED OIL

CAUSTIC SODA

STEARIC ACID

CAUSTIC POTASH

COCOANUT OIL

DRUMS-TANK CARS-TANK WAGONS

ANIMAL OILS, FATS,

CHEMICALS, VEGETABLE OILS

Every raw material necessary for the manufacture of soap and allied products is carried in stock and is available at the right price for immediate delivery to your door.

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AMMONIA
BLEACHING
POWDER
BORAX
BICARBONATE OF
SODA
CARBON
TETRACHLORIDE
CALCIUM
CHLORIDE

CAUSTIC SODA
CAUSTIC POTASH
DISODIUM
PHOSPHATE
GLAUBER'S SALTS
GLYCERINE
METASILICATE
OXALIC ACID
POTASSIUM
CARBONATE
SAL AMMONIAC

SALT
SAL SODA
SILICATE OF SODA
SODA ASH
TRISODIUM
PHOSPHATE
CASTOR OIL
COCOANUT OIL
CORN OIL
COTTONSEED OIL
LARD OIL

NEATSFOOT OIL
OLEIC ACID-RED
OIL
OLIVE OIL
OLIVE OIL FOOTS
PALM OIL
PALM KERNEL OIL
PEANUT OIL
RAPSEED OIL
ROSIN
SALAD OIL

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TRADE

NEWS... . . .

Buy Cosmopolitan Prods.

Benjamin M. Berman recently reported that he has acquired the business of Cosmopolitan Products Co., Los Angeles, makers of soap and chemical products, and specializing in mechanics hand soap containing a wood-flour base.

N. Y. BIMS Dinner Jan. 23

BIMS of New York is holding its annual dinner at the Hotel Lafayette, New York, on January 23 according to an announcement from Martin Schultes of the Hewitt Soap Co., New York, chairman of the N. Y. BIMS. Owing to the limited facilities of the hotel and the unusual menu served, attendance will be limited to members only again this year. This is the only winter function of the N. Y. BIMS.

Helene Curtis Moves

Helene Curtis Industries, Chicago cosmetics manufacturers, are now located in a new building, recently purchased at 505 N. Sacramento Blvd. Transfer of production lines, research activities and office staff from the former plant at 2638 N. Pulaski Road, was effected during December.

Wants American Soaps

A reader of *Soap & Sanitary Chemicals* is interested in representing an American soap manufacturer as agent for the sale of laundry soaps. Persons interested should contact Victor Mansour, P. O. Box No. A 86, Port-Au-Prince, Haiti, W. I.

Pepsodent Appointments

Pepsodent Division of Lever Brothers Co., Cambridge, announced December 19th, the appointment of George R. Stege, Jr. as director of sales. Mr. Stege, formerly director of advertising and merchandising, filled the position left vacant by the resignation of Philip Kaloch, who left December 31st to become executive

vice-president and general manager of the Toni Co., St. Paul. Mr. Stege joined Pepsodent in 1943 as director

**GEORGE R. STEGE, JR.**

of advertising and merchandising after many years as a salesman, sales and advertising executive.

Frank R. Brodsky has just been appointed director of advertising for the Pepsodent Division. He became associated with Pepsodent in 1945 after serving for sixteen years as advertising manager for the Elgin National Watch Company.

To Market All-'N-1, & Fazt

Continental Soap Corp., Chicago, has announced that it will concentrate on the manufacture of two new soap products for the consumer market. "All-'N-1" is a new shampoo, and "Fazt" is a new granulated soap product. The company has appointed M. R. Kopmeyer Co., Louisville and Chicago, to handle advertising for the new products.

Brownell, Lever Sales Manager

John O. Brownell was named general sales manager of Lever Brothers Co., Cambridge Mass., it was reported on January 2nd. He had been assistant general sales manager since 1941.

Dr. Aaron Rokeach Dies

Dr. Aaron Rokeach, M.D., president and chairman of the board of I. Rokeach & Sons, Brooklyn kosher soap manufacturers and food packers, died suddenly Dec. 6. Upon the death of his father, Israel, Dr. Rokeach succeeded as president of the firm. He is survived by his widow, three sisters, one of whom is a dentist, and a brother, Louis, who is also a doctor.

Beauty Institute Meets

Nearly 200 manufacturers of supplies for the beauty and barber shop business participated in the trade show staged by the Beauty and Barber Shop Institute at its 42nd annual meeting in Chicago late in November. Among manufacturers of soaps, shampoos and kindred products were the following: Amole Soap Products; Colgate-Palmolive-Peet Co.; Conti Products Corp.; Davies-Young Soap Co.; F. W. Fitch Co.; Harley Soap Co.; Lambert Pharmacal Co.; Lightfoot, Schultz Co.; Middlebrook Lancaster, Inc.; Procter & Gamble Distributing Co.; Raymond Laboratories; and J. B. Williams Co.

A strong plea for action to obtain removal of the 20 per cent luxury tax on cosmetics was voiced by Jacob Reck, Washington, D. C., attorney, in a convention address. The tax, he asserted, should be abolished because it keeps small beauty shops and drug stores from handling cosmetics. They would need at least one extra person to handle bookwork connected with the tax, he claimed.

U. S. Toiletries Market

A recent issue of *Foreign Commerce Weekly* featured an interesting article about the position that U. S. toiletries have gained throughout the world. The article is entitled "World Knows and Wants U. S. Toilet Preparations."

West Coast Soapers Expand

K. C. Working Chemical Co., Los Angeles, has completed plans for construction of a five-story, structural steel addition to their soap factory on Paramount Boulevard, Long Beach. The new structure, to be used as a spray tower, will be 100 by 50 feet in area, and will cost approximately \$50,000. Smilo Soap Co., Los Angeles has obtained CPA approval for the construction of a new warehouse building on east Washington Boulevard. The structure will be 115 by 44 feet in area and will cost \$9500. Smilo Soap Co. (reported in last month's issue page 57 through printing error as "Smile" Soap Co.) plans additional construction in the way of a \$4800 steel canopy. Ease, Inc., moved in December from its old quarters at San Fernando Road, Los Angeles, into a new, Quonset-type building at 2228 North Hollywood Way, Burbank. The building, on a two acre site, has 6,400 square feet of floor space with an additional 800 square feet on a balcony platform. The company manufactures "Ease," a synthetic detergent, packaged in one-pound and in 30-ounce packages for retail trade, and in bulk for industrial and commercial uses. Los Angeles Chemical Co. has replaced with a new building losses suffered in the \$100,000 fire of last July at which time two of the buildings of their factory were destroyed. The new building is equipped for production of such specialties as spotters, cleaners, flame proofers, water proofers, special polishes, disinfectants, bleaches and cleaning compounds. About 6,000 square feet are available in this building. A second building, expected to be ready in early 1947, will manufacture agricultural dusts, insecticides, and other specialties.

Kelite Products, Inc., Los Angeles, is moving its subsidiary, Kenu, Products, Inc., from its present location to a new site at 130 E. Elmyra Street. The company has been manufacturing a crystalline household cleaning compound. The new building is of masonry construction and will provide about 26,000 square feet of space.

For the production of coconut oil, Copra Oil and Meal Co., Wilmington, Calif., will construct a one-story

copra plant at 914 San Clemente Street in Los Angeles Harbor. The steel and granite structure, to be 50 by 240 feet in area will provide room for offices, locker rooms, laboratory, and metal storage tanks, and will cost \$70,000.

O. E. Jones' Mother Dies

Mrs. Alice Jones, 78, mother of O. E. Jones, vice-president of Swift & Co., died Dec. 16 at her Hooperston, Ill., home.

Vermex Offer Dog Shampoo

Vermex Company of America, Glendale, Calif., has launched an extensive promotional campaign in west coast territory for "Green Wood's Dog Shampoo." Packaged in pint bottles, with a green, gold and red label, picturing the company trademark—a playful terrier sniffing a tree trunk—the product is guaranteed to destroy fleas, lice and other parasites and keep pets free from doggy odors. Los Angeles was used as a test market and general distribution in Pacific coast states will be effected during 1947, supported by newspaper advertising and direct mail.



New Launderette Soaps

Two new products for use in the "launderette" type self-service laundries were recently reported as being distributed on the west coast. "O-So-Kleen," a synthetic washing powder manufactured by Coast Products Co., Los Angeles, is to be distributed in that area by Leo J. Meyberg Co., Los Angeles, distributors of the Bendix Automatic Home Laundry. Harper-Meggee Co., distributes the compound in Oregon and Washington; Flint Distributing Company, in Salt Lake City and Utah; Larson Distributing Co., in Denver and Colorado; Electrical Equipment Co., in Phoenix and Arizona; and W. G. Walz Co., in El Paso and Texas. Another method of distribution is through the Pacific Telecoin Corp., Los Angeles, which sells franchises to operate the "launderettes." At present the "launderette" system receives its "O-So-Kleen" in bulk but plans are ready, says the company, for packaging the powder in special containers for this use. Coast Products also packages a two-pound unit for retail distribution and supplies the item in bulk to institutions.

The other new product, manufactured by Hockwald Chemical Co., San Francisco, is a specially compounded washing machine powder containing both bleach and bluing, developed for use in self-service laundries of the "launderette" type. At present, however, the bulk of the product is being bought by purchasing agents of large industrial plants who purchase one-ton lots and resell the powder in 50-pound quantities to employees at cost. The company also manufactures private label shampoos.

James W. Kelly Dies

James W. Kelly, sales manager of the technical division of Los Angeles Soap Co.'s industrial department, died November 16 at his home in Los Angeles at the age of sixty-six. He was born in South Bend, Indiana and graduated from University of Notre Dame. He began work with the company in 1927 as divisional manager for the states of Arizona, Texas, and Oklahoma.

New Cleaner "Soil-Off"

Soil-Off Mfg. Co., Los Angeles, has signed with American Weekly's national edition for a schedule of full-page color ads for "Soil-Off," a liquid paint cleaner. Five other national magazines will also be used, supplemented in certain markets by newspaper, trade journal and spot radio advertising. Point-of-sale material to be distributed includes neck band cards, streamers, window and shelf displays, for all of which a budget said to be well in excess of \$300,000, has been allotted. According to the Frank Oxarart Co., Los Angeles, which is directing the campaign, "Soil-Off" was developed by a housewife, Mrs. Vera Nyman, who spent 6½ years in personal door-to-door distribution of her home-made cleaner. Plans are being discussed, it was stated, for another product soon to be placed on the market after test campaigns.

Guiney Leads Pkg. Forum

J. J. Guiney, Lever Bros. Co., Cambridge, Mass., was discussion leader in a conference devoted to packaging problems of soap and cosmetics manufacturers, which was a feature of the Packaging Institute's 2-day meeting in Chicago late in November. Developments in plastics for packaging cosmetics, caps and closures for cosmetics, and use of fiber drums for

packaging chemicals in bulk were among topics on which reports were presented by manufacturers' representatives.

Cotton-Coconut Oil Swap

Increase in U. S. soap production will be helped somewhat by an exchange agreement with the Netherlands East Indies for coconut oil, according to E. D. White, cotton expert of USDA. The East Indies will send coconut to U. S. in exchange for textiles being currently processed in Japan from this year's low-grade cotton surplus of United States.

P & G Wins Safety Award

Procter & Gamble Mfg. Co.'s Chicago plant and Victor Chemical Works, Chicago, were winners of Safety Awards in an interplant accident prevention contest sponsored by the Greater Chicago Safety Council for the period Jan. 1 to June 30, 1946. Entered in the contest were 139 Chicago area plants with 192,539 employees who worked 205,900,851 man hours with a frequency rate of only 7.6 lost time accidents per million man hours worked. This plant rate is the lowest in any local Council safety contest in the country, it was announced. Awards were presented at a dinner on Dec. 3, at which Carl Taylor, Waukesha, Wis., banker was the principal speaker.



A new film soap is now being marketed in the form of scented soap flowers in many pastel colors. The soap flowers, made and distributed by Florence Barton, Inc., New York, are packaged in transparent cellulose acetate boxes. The film forming agent is "CMC" produced by Hercules Powder Co., Wilmington. The boxes contain 50, 100, or 200 soap flowers.

"Golly," New Detergent

A newcomer to the detergent field, "Golly," was recently announced by Nugul Mfg. Co., Wichita Falls, Texas. The product is used for the bath as well as for laundry and kitchen work, and is being promoted throughout the southwest where distribution is now confined. "Golly" is retailed in 24-ounce sacks at 25 cents for the kitchen powder, and eight-ounce sacks at the same price for the perfumed bubble bath.

Expands Synthetics Output

Expansion of production facilities for synthetic detergents by the construction of a three million dollar plant at Monsanto, Ill. was announced in late December by Monsanto Chemical Co., St. Louis. The company said the new plant, a one-story, concrete building already under construction, will be in operation in 1947. The Monsanto plant at Nitro, W. Va., is being enlarged to increase further the production of the synthetic surface-active chemical "Santomerse" which is claimed to be an efficient detergent in water which is soft or hard, hot or cold, and not to involve the use of edible fats and oils in its manufacture.

Coast Copra Mills Expand

In anticipation of increased copra crushing on the west coast, two companies will expand their facilities. At the oil plant of Spencer Kellogg & Sons, Long Beach, two new copra handling buildings will be erected immediately, according to the company. One, to be four stories high and 90 by 32 feet in area, will cost \$40,000; while the other, five stories high and 90 by 142 feet in area, will cost \$74,000.

Vegetable Oil Products Co., Wilmington, Calif., has obtained CPA approval for construction of a copra mill at 410 South Avalon Boulevard in Wilmington to cost \$10,410.

Chiffon Radio Show

A new radio show is being sponsored by Armour and Co., Chicago, for "Chiffon" soap flakes. Aired over CBS-WBBM at 5:30 (EST), the audience participation show covers hints on every phase of housekeeping.

Something NEW has been OMITTED



MALMSTROM'S new Cosmetic Grade LANOLIN IS NOW ODORLESS!

In the new non-staining PALE COLOR

From Lanolin headquarters comes another achievement in progressive leadership—the new MALMSTROM Cosmetic Grade Lanolin that is ODORLESS! This revolutionary development will help to give your Soaps, Shaving Creams, and Ointments dependable quality advantages that win consumer preference and increase sales. The new ODORLESS and PALE COLOR features of MALMSTROM LANOLIN will help to simplify your manufacturing process. Added to your soaps and ointments this improved Lanolin will—



Write for methods of incorporating MALMSTROM'S ODORLESS LANOLIN into your soaps and ointments. Samples and Prices upon request.

- Increase the emollient properties of the finished soap, minimizing the defatting effect.
- Act as a skin softener, relieving dry skin conditions, because of its penetrating action. Also reduce soap irritation of sensitive skins.
- Will not turn rancid or saponify since it is not a glyceride. Very stable—resists heat and sun.
- Will not darken light shade soaps.
- Serve as a fixative for the essential oils used for perfuming soap, retaining the fragrance for the life of the soap.
- Improve the quality and texture. Acting as a lubricant during milling, it avoids brittleness of finished bar after ageing and drying out. Counteracts presence of free alkali.

N. I. MALMSTROM & CO.

AMERICA'S LARGEST PROCESSOR OF WOOL FAT AND LANOLIN

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SALES AGENTS—

FULLER ASSOCIATES
Cleveland 14, Ohio

COMMERCIAL CHEMICALS, INC.
Buffalo, N.Y.

E. K. MASKEL
Detroit, Michigan

GRIFFIN CHEMICAL CO.
San Francisco, Calif.
Los Angeles, Calif.

Brooks, Trade Board Head

H. L. Brooks was recently elected president of New York Board of Trade, succeeding Ralph E. Dorland,



HERMAN L. BROOKS

Dow Chemical Co., who became chairman of the board. Mr. Brooks, formerly president of Coty, Inc., New York, and until last May president of the Toilet Goods Association, is said to be planning to go into the cosmetic business soon with his own company.

Swift Earnings Up

Swift & Co.'s earning for the 1946 fiscal year totaled \$16,394,739, or \$2.77 a share according to the company's yearbook, released Dec. 16. This compares with \$2.08 a share in the 1945 fiscal year. Total sales for the year 1946 were \$1,308,364,155, an increase of less than \$1,000,000 over 1945, but total tonnage of meat handled was 11 per cent lower. Earnings, as President John Holmes stated, represent "overall results of all varied operations." Byproducts revenues, he indicated, were an important part of these "overall results." Among such byproducts were a new household cleaner, introduced by Swift during the year, and a line of agricultural insecticides which was expanded during the year.

Ungerer Los Angeles Office

Ungerer & Co., New York, opened a new branch office December 1 at Los Angeles, Calif., in charge of George R. Mac Donald, according to a recent announcement by Fred Ungerer, president of the company. The new

office which will service the entire west coast is located at 3757 Wilshire Boulevard, Los Angeles, 5. Mr. Mac Donald was for many years in charge of the New England territory for Ungerer with headquarters in Boston.

C-P-P Buys Kay Daumit

Kay Daumit, Inc., Chicago manufacturer of cream shampoos ("Lustre-Creme") and leg makeup, has been purchased by Colgate - Palmolive - Peet Co., Jersey City, N. J., it was announced, following a meeting of the Daumit organization's sales force in Chicago, Nov. 23. Executives of C-P-P stated later that the company will be conducted as a division of C-P-P and that John Elliott, manager of the company's Brooklyn soap operations, will be placed in charge of Chicago operations for the Daumit division.

Kay Daumit, Inc., was launched in March, 1942, when war conditions ended the small vacuum cleaner business conducted by Harry Daumit, according to newspaper accounts. For the first year and a half, while his wife, Kay, ran their office, Daumit was the sole salesman and materials expediter for the leg makeup resembling nylons which they had developed. When a new cream shampoo, "Lustre-Creme," was added to the line, business boomed. On Jan. 31, 1946, the company was incorporated with a capital of \$10,000. By late fall of last year sales were reported to be approaching \$6,000,000 on an annual basis. Several large soap companies became interested until the deal with C-P-P was consummated. Sales price was said to be "about \$4,000,000, partly in cash and partly in stock."

Salvaged Fat Prices Rise

A substantial country-wide rise in the price paid housewives for salvaged cooking fat, according to on-the-spot newspaper surveys, was reported in December by the American Fat Salvage Committee, New York. The OPA price was 4c per pound. Current top prices now being paid are reported as follows: Boston, 7c per pound; Buffalo, 10c per pound; Chicago, 11c per pound; Cincinnati, 10c per pound; Los Angeles, 4 to 11c per pound; Philadelphia, 10c per pound.

AATCC Elects Herrmann

The American Association of Textile Chemists and Colorists recently elected Henry F. Herrmann, of the



HENRY F. HERRMANN

New York section, as president of the Association. Mr. Herrmann is with General Dyestuff Corp., New York.

P&G New Products

Procter & Gamble Co., Cincinnati, is introducing in limited test markets, two new products, "Tide" and "Prell." Both are the result of recent developments by P&G researchers in the hynosol family of products, already represented by such established brands as "Drone" shampoo, "Dreft," and "Teel" liquid dentifrice. "Tide" is claimed to be the first household product in the synthetic detergent field with heavy laundry cleaning power and safety for all washable fabrics and colors. "Prell" is a new concentrated cream shampoo in a tube.

Continental Elects Eggerss

The election of Hans A. Eggerss to the presidency of Continental Can Co., New York, was announced in mid-December by the board of directors of the company. Mr. Eggerss joined the organization in 1942, when Continental acquired the Container Company of Van Wert, Ohio, of which Eggerss had been president. Shortly after joining Continental as head of its paper container division, he was elected a vice-president of the company and since February 1946, has been its executive vice-president.

FOR QUALITY PRODUCTS

Specify

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CAUSTIC POTASH



49-50% LIQUID in tank cars

45% LIQUID in drums

Quality soaps and sanitary chemicals require quality caustic potash in their processing—because only a potash low in impurities better meets the exacting specifications for clear, stable products.

Solvay Caustic Potash liquid is low in turbidity. Shipped in tank cars, Solvay Caustic Potash liquid contains 49-50% Potassium Hydroxide. In drums, this clear liquor contains 45% KOH

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Cosmetic Chemists Meet

The Society of Cosmetic Chemists held their second annual meeting at the Savoy Plaza Hotel, New York, December 6th. The meeting was highlighted by the presentation of seven papers on various phases of cosmetology, and by the election to honorary membership of Dr. Dan Dahle, formerly Chief, Cosmetic Division, Food and Drug Administration, and now chief chemist of Bristol-Myers, Inc., New York.

Officers elected for the coming year are E. G. Klarmann, Lehn and Fink Co., Bloomfield, N. J., president; Raymond Ried, Wm. R. Warner and Co., New York, vice-president. Walter A. Taylor, Pond's Extract Co., Clinton, Conn., and Maison de Navarre, Chicago, were elected directors, and Emery Emerson was elected secretary-treasurer.

Speaking on "The Diagnosis of Cosmetic Dermatitis," Louis Schwartz, M.D., U. S. Public Health Service, discussed the criteria for proof of cosmetic dermatitis and methods of patch testing with the various cosmetics. Curt P. Wimmer, consulting chemist, New York, speaking on "Educational Requirements for Cosmetic Chemists" stressed the need for a course of instruction on cosmetics to be given either as an undergraduate, or preferably a graduate course leading to a PhD. Evaluating the "Efficacy and Safety of Cosmetics," Dr. Albert F. Gutierrez, Foster Dee Snell, Inc., Brooklyn, described patch tests for cosmetics and various performance tests for sun-tan preparations and deodorants. Dr. S. M. Peck, Dermatologist, New York, read a paper on "The Pigment Melanin of the Skin and Hair" which concerned modern theories of pigment formation, and the possible formulation of chemical and biologic products to effect pigment function. Dr. Everett G. McDonough, Evans Chemetics, Inc., New York discussing, "Mercaptans in Cosmetics" pointed out their use in odorless depilatories and cold waving lotions.

The paper "The Importance of the Light Source in Testing Cosmetics" read by Mr. F. C. Reinshield, Analyte Instruments Inc., Providence,



Newly appointed executives in the advertising department of Procter & Gamble Co., Cincinnati, are: left to right, A. N. Halverstadt, manager of the radio and media division; W. R. Chase, manager of the brand development division of the advertising department; and H. J. Morgens, manager of the advertising department.

discussed the variables of lamps used for color matching. Ruth Boyle, Director, Good Housekeeping Beauty Clinic, discussed, "Operating a Cosmetic Clinic."

Gonser Joins Lever Bros.

Thomas A. Gonser was recently named director of personnel and public relations of Lever Brothers Co., Cambridge, Mass., effective January sixth. A native of Montana, Mr. Gonser comes to his new post from Northwestern University, Chicago.

Markets New Synthetics

Riches-Nelson, Inc., New York, distributors of chemicals and allied products have announced the marketing of a new line of synthetic surface-active agents for use in dispersing, wetting, penetrating and enhancing detergency. The new alkyl, aryl sulfonate and modified alcohol sulfate type compounds are neutral in pH, ranging from 6.8 to 9, and are produced in spray-dried beads or in flake, granular, liquid or paste form. Packed in 300 to 450 pound drums, net weight, the products are said to be useful for the manufacture of household and industrial cleaners and detergents, and can be used alone or in combination with mild alkalies or phosphates. Foaming characteristics are claimed to be excellent at all temperatures in hard or soft water. Further details may be obtained by writing the company's office, 342 Madison Ave., New York.

New Soap Plant in Arkansas

A new \$200,000 soap plant of the Southern Chemicals Co. in Geyer Springs, Ark., commenced production about mid December on soap powder to be marketed by the Nu-Way Products Co., North Little Rock, Ark. The new plant has a capacity of 150,000 pounds of soap weekly but later, when a third 80,000 pound kettle is installed, the capacity will be around 225,000 pounds weekly.

The firm will package powder in 100-pound sacks for the laundry trade, calling the soap powder, "Nu-Way." For household use, the firm will pack "Hi-Suds" in 20-ounce packages. E. A. Bellis, formerly with the Texas Soap Company at Houston, is the plant supervisor and technician. T. Hood is president, Oscar Hood, vice president, and Wade Mallett secretary-treasurer.

J. R. McMains Jr. Expands

J. R. McMains will shortly start construction of a new building to house an aluminum soap converter in Hynes, Calif. The out-lay will have an area of 800 square feet and cost \$2,800.

Smilo Soap Moves

Smilo Soap Company, Los Angeles, producer of boxed and bulk granulated soap is expanding into a new building of about 5000 square feet of floor space located at 4250 E. Washington Boulevard, Los Angeles. The company, which has been in production for about a year, is operated by Adolph Smilo and his four sons who are veterans of the last war, Kim, Martin, Barney and Sidney.



Solve the problem of stabilizing
your soap perfume by using



FIXORESINS

light colored fixatives which in-
crease lasting properties without
increasing costs. A Schimmel line
in constant demand for toilet soaps.



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NEW

TRADE MARKS

The following trade-marks were published in the December issues of the *Official Gazette* of the United States Patent Office in compliance with Section 6 of the Act of September 20, 1905, as amended March 2, 1907. Notice of opposition must be filed within thirty days of publication. As provided by Section 14, fee of ten dollars must accompany each notice of opposition.

Trade Mark Applications

META SUDS—This in upper case, bold letters for composition for washing glass, china, silverware and for general cleaning and washing purposes. Filed Aug. 29, 1944 by Pittsburgh Chemical Laboratory, Pittsburgh, Pa. Claims use since May 15, 1941.

WINDOW LITE—This in upper and lower case block, and upper and lower case, bold, script letters within an vertical spheroid for preparation for polishing glass and metal surfaces. Filed Feb. 28, 1946 by Palmer Show Card Paint Co., Detroit. Claims use since Sept. 6, 1939.

FRIDAY—This in extra bold, black, upper and lower case letters beneath four small rectangular boxes containing abbreviations of the four previous days of the week and above the drawing of the side of a house having laughing facial features, for furniture cleaning preparation. Filed Mar. 21, 1946 by Doran Laboratories, Inc., New York. Claims use since Jan. 21, 1946.

RAYCAL—This in upper case, open letters for washing and cleaning compounds in powder form for general industrial and home cleansing purposes. Filed Mar. 25, 1946 by American Basic Chemicals, Inc., Baltimore. Claims use since Apr. 20, 1945.

RESIDOL—This in upper case, extra bold, black letters for insecticides. Filed Mar. 13, 1946 by West Disinfecting Co., Long Island City, N. Y. Claims use since Sept. 28, 1945.

DEEDETH—This in upper and lower case, bold, script letters for in-

secticide. Filed Mar. 28, 1946 by Distributors, Inc., St. Paul, Minn. Claims use since Mar. 1, 1946.

TWIN—This in upper case, extra bold, black letters for combination insect repellent and sun tan lotion. Filed Apr. 18, 1946 by Chemical Concentrates Co., New York. Claims use since Mar. 1, 1946.

YOUNG LAD—This in upper and lower case, bold, script letters for toothpaste, shampoo and pine bath foam. Filed May 1, 1946 by Helene Pessl, Inc., New York. Claims use since Dec. 12, 1945.

SOVAC—This in upper case, extra bold, black letters for insecticides and rust preventive. Filed May 23, 1946 by Socony-Vacuum Oil Co., New York. Claims use since Mar. 14, 1945.

PROSOY—This in upper case, bold, stencil letters for mechanically refined vegetable protein materials for use in making insecticides. Filed Mar. 13, 1946 by Glidden Co., Cleveland. Claims use since Jan 10, 1939.

ALOYL—This in upper case, open shadow letters for degreasing fluid. Filed Apr. 30, 1945 by Aloyl Co., St. Paul. Claims use since Jan. 1, 1937.

FLUORICIDE—This in upper case, outline letters for tooth paste and powder. Filed May 22, 1945 by Fluorite, Danbury, Conn. Claims use since Apr. 17, 1945.

Drawing of an enlarged arrow head over an arrow—This for all purpose insect spray, mouse poison, and roach powder. Filed July 14, 1945 by Arrow Engineering & Chemical Co., Flint, Mich. Claims use since July 5, 1945.

CC-101—This in upper case, extra bold letters and numerals for preparation for treating textile fibers and having detergent properties. Filed Jan. 29, 1946 by Coffette Products, Inc., Brooklyn. Claims use since Oct. 2, 1944.

PHONECIDE—This in upper and lower case, bold, script letters for germicidal preparation for disinfecting telephone, etc. mouthpieces. Filed

Mar. 18, 1946 by Ard Products Co., Chicago. Claims use since Mar. 5, 1946.

TWINKLE TUB—This in upper case, bold letters for detergent material having bubble producing properties. Filed Feb. 13, 1946 by Twinkle-craft Laboratories, Inc., Jackson Heights, N. Y. Claims use since Dec. 27, 1945.

CARENA—This in upper and lower case, medium, script letters within a decorative circular border for antiseptics in powder, tablet and liquid form for cleansing parts of the body. Filed Apr. 30, 1946 by Peggy Breed, New York. Claims use since Apr. 10, 1946.

CREMODIAZINE—This in upper case, medium bold letters for antibacterial suspension. Filed Apr. 30, 1946 by Sharp & Dohme, Inc., Philadelphia. Claims use since Apr. 26, 1946.

CREMOMERAZINE—This in upper case, medium bold letters for antibacterial suspension. Filed Apr. 30, 1946 by Sharp & Dohme, Inc., Philadelphia. Claims uses inc Apr. 26, 1946.

DISH-NU—This in upper case, extra bold, black letters for dish-washing compound. Filed Oct. 15, 1945 by Edw. Livingston & Sons, Kansas City, Mo. Claims use since February, 1940.

SUDSEX—This in upper case, bold, stencil letters for synthetic detergents in liquid, paste and powder form for industrial and domestic cleaning purposes. Filed Jan. 30, 1946 by Hardesty Chemical Co., New York. Claims uses inc Jan. 8, 1946.

NYLO-GRAINS—This in upper case, medium letters for soap preparations. Filed Feb. 2, 1946 by Gertrude R. Lee, Roxbury, Mass. Claims use since Dec. 3, 1945.

PLUS CLEANSER—This in upper case, medium letters, one word above the other for cream soap preparations. Filed Feb. 12, 1946 by Helena Rubinstein, Inc., New York. Claims use since Nov. 21, 1945.

TERGE—This in upper case, extra bold, black stencil letters for detergents used as a general purpose cleanser for industrial and home use. Filed Mar. 1, 1946 by Quaker Chemical Products Corp., Conshohocken, Pa. Claims use since Jan. 21, 1946.



EXPERIENCE TAUGHT AMERICA

**When Mark Twain was working on a Riverboat, plying the Mississippi
D & O was leader in its field**

Producing... Planning... Building... Doing—America learned thru trial and error, thru the demands of inexorable reality. With her heart and her head, with her arms and her tools she worked, worked, worked, inspired with a dream of better things and a better world to come. And for close to 150 years D & O was a living, integral

part of this great American Adventure, acquiring special skills and talents, introducing new, improved techniques and methods. And today, D&O continues to maintain leadership in its field as in the days of America's infancy...continues to serve industry's exacting needs...continues to produce, plan and build for a greater, better America.

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Plant and Laboratories, Bayonne, N. J.

RAW MATERIALS - ESSENTIAL OILS - AROMATIC CHEMICALS - PERFUMES



JOT—This in upper case, extra bold letters for tooth paste. Filed Nov. 1, 1945 by Galen Laboratories, Pittsburgh, Pa. Claims uses since Sept. 20, 1945.

LANBURN—This in upper case, medium letters within a circle, which in turn is surrounded by another circle and in which the words "Lanburn Chemical Co., Irvington, N. J." appear for chemical preparation for removing rust. Filed Dec. 15, 1945 by Lanburn Chemical Co., Irvington, N. J. Claims use since June 14, 1945.

SWEET 'N LOVELY—This in upper and lower case, bold, script letters for bubble bath, hair shampoo, etc. Filed Jan. 19, 1946 by Parfait, Inc., Chicago. Claims use since June 1, 1945.

"FAL-CONET"—This in upper case, reverse letters on an oval background in which are two oval openings which carry two drawings of a bug, for insecticides. Filed Feb. 16, 1946 by Heath Products Co., Bristol, Pa. Claims uses since Jan. 7, 1946.

FIVE-5-FOLD—This in upper case,

extra black bold letters and numeral for insecticides. Filed Feb. 27, 1946 by U. N. Products Co., New York. Claims use since Nov. 10, 1945.

IN THE GROOVE BUBBLING RHYTHM—This in upper case, bold letters for bubble bath preparation. Filed Apr. 25, 1946 by Julius V. Madsen Co., Los Angeles. Claims use since Dec. 27, 1945.

WONDRA—This in upper and lower case, medium letters for shampoo. Filed May 6, 1946 by Procter & Gamble Co., Cincinnati. Claims use since Feb. 26, 1946.

PHILLIPS 66—This in upper and lower case letters on a shield design for furniture polish. Filed Mar. 27, 1944 by Phillips Petroleum Co., Bartlesville, Okla. Claims use since Oct. 1931.

AMICIDE—This in upper and lower case, bold letters for disinfecting and sterilizing compound. Filed May 4, 1946 by The Flintkote Co., New York. Claims use since July 19, 1945.

Trade Marks Granted

423,846. Insect Spray. Filed by Carnegie Chemical Manufacturing Co., Los Angeles, Jan. 21, 1946. Serial No. 495,149. Published June 18, 1946. Class 6.

423,866. Insecticide and repellent. Filed by R. M. Hollingshead Corp., Camden, N. J., Feb. 23, 1946. Serial No. 497,096. Published June 11, 1946. Class 6.

423,868. Moth spray. Filed by Carnegie Chemical Manufacturing Co., Los Angeles, Feb. 25, 1946. Serial No. 497,187. Published June 18, 1946. Class 6.

423,869. Veterinary flea and louse powder. Filed by Lederle Laboratories, Inc., New York, Mar. 1, 1946. Serial No. 497,485. Published June 1, 1946. Class 6.

423,911. Alkaline detergent for cleaning surgical instruments and hospital laboratory glassware. Filed by Don Baxter, Inc., Glendale, Calif., June 5, 1944. Serial No. 470,909. Published June 11, 1946. Class 4.

423,913. Soap for dissolving in water to provide a coolant fluid for cutting and grinding. Filed by Du Bois

Co., Cincinnati, Dec. 23, 1944. Serial No. 477,872. Published June 11, 1946. Class 4.

423,919. Compound in liquid form for cleaning rugs, carpets, upholstery, woodwork, leather, etc. Filed by Everett M. Goens, Richmond, Ind., Mar. 30, 1945. Serial No. 481,538. Published June 11, 1946. Class 4.

423,929. Liquid polish and cleanser for furniture, automobiles, floors, woodwork, etc. Filed by Standard Oil Co., Louisville, Ky., July 10, 1945. Serial No. 485,663. Published June 11, 1946. Class 16.

423,933. Cleansing preparation in the form of a cream or paste. Filed by Beach Soap Co., Lawrence, Mass., Aug. 29, 1945. Serial No. 487,697. Published June 11, 1946. Class 4.

423,947. Wax for polishing linoleum, etc. Filed by Central Chemical Co., Kansas City, Mo., Nov. 3, 1945. Serial No. 491,023. Published June 18, 1946. Class 16.

423,948. Floor sweeping compounds. Filed by Cleno Products Manufacturing Co., St. Louis, Nov. 5, 1945. Serial No. 491,105. Published June 11, 1946. Class 4.

423,950. Automobile polishing wax, paint remover preparation, self-polishing floor wax, furniture polish and automobile polish. Filed by Durite Corp., Detroit, Nov. 8, 1945. Serial No. 491,249. Published June 4, 1946. Class 16.

423,952. Water soluble paste for general purpose cleaning. Filed by Fluff Sheen Cleaners, Chicago, Nov. 10, 1945. Serial No. 491,409. Published June 11, 1946. Class 4.

423,956. Non-inflammable liquid paint cleaner. Filed by Soil-Off Manufacturing Co., Glendale, Calif., Nov. 21, 1945. Serial No. 492,004. Published June 11, 1946. Class 4.

423,995. Sudsing cleaner, cleanser and detergent. Filed by Procter & Gamble Co., Cincinnati, Dec. 29, 1945. Serial No. 494,116. Published June 11, 1946. Class 4.

423,996. Sudsing cleaner, cleanser and detergent. Filed by Procter & Gamble Co., Cincinnati, Dec. 29, 1945. Serial No. 494,118. Published June 11, 1946. Class 4.

423,997. Sudsing cleaner, cleanser and detergent. Filed by Procter & Gamble Co., Cincinnati, Dec. 29, 1945. Serial No. 494,120. Published June 11, 1946. Class 4.

424,159. Chemical preparation for cleaning and preparing metal surfaces for painting. Filed by Neilson Chemical Co., Detroit, Oct. 8, 1945. Serial No. 489,600. Published July 2, 1946. Class 6.

424,164. Insecticides. Filed by Parsons Chemical Works, Grand Ledge, Mich., Oct. 20, 1945. Serial No. 490,693. Published June 25, 1946. Class 6.

424,175. Dog shampoo. Filed by Rex Stuart Co., New York, Nov. 16, 1945. Serial No. 491,728. Published June 25, 1946. Class 6.

424,189. Insecticides. Filed by Consolidated Cosmetics, Chicago, Dec. 15, 1945. Serial No. 493,326. Published June 25, 1945. Class 6.

424,190. Household insecticide. Filed by Heresite & Chemical Co., Manitowoc, Wis., Dec. 15, 1945. Serial No. 493,354. Published June 25, 1946. Class 6.

424,217. Pest inhibiting compositions. Filed by Sherwin-Williams Co., Cleveland, Dec. 4, 1946. Serial

(Turn to Page 137)

Chlorine, Sulfur or Thionyl Group— ...all from Thionyl Chloride

If you are interested in introducing chlorine, sulfur alone or sulfur in combination with oxygen, into organic or inorganic compounds, you should investigate the use of Hooker Thionyl Chloride.

In this one inorganic chemical, these three groups are readily available. Sulfur dioxide and hydrogen chloride, the gaseous byproducts of its reaction, are easily removed. Excess thionyl chloride may be recovered by distillation.

High purity of Hooker Thionyl Chloride has stimulated use of this chemical in organic synthesis. Freedom from side reactions and good yields of a purer product are comitants of this high purity.

Thionyl Chloride is a clear, pale yellow to red liquid with a sharp irritating odor. It fumes when exposed to moist air and requires some special care in handling and storage. It is available in technical and refined grades. Principal properties are given below:

Formula	SOCl_2
Molecular Weight	119.0
Specific Gravity, 15.5°/15.5°C.	1.644
Boiling Range	
Tech	72° to 79°C.
Refined	75° to 78°C.
Pour Point	Below -75°C.
Flash Point	None
Fire Point	None

Technical Data Sheet No. 718 gives more complete physical and chemical data and analysis as well as suggestions for handling. Bulletin No. 328A, "Hooker Chlorinating Agents," is also available to those interested. Your name and the bulletin numbers on your letterhead will bring you this descriptive literature.



"Artists in Lead Burning" design and fashion the lead equipment required for processing and handling many of the Hooker Chemicals.

**HOOKER
ELECTROCHEMICAL
COMPANY**

Buffalo Avenue and Union Street, Niagara Falls, N. Y.
New York, N. Y. Wilmington, Calif. Tacoma, Wash.

Caustic Soda Paradichlorbenzene Muriatic Acid Chlorine Sodium Sulfide Sodium Sulfhydrate

**HOOKER
CHEMICALS**

BIDS AND AWARDS

Misc. Treasury Bids

In a recent opening for miscellaneous supplies by the Treasury Department, Washington, D. C., the following bids were received on (1.) 900 pounds of naphthalene; (2.) 12,000 pounds of soap paste, and (3.) 9,350 gallons of floor wax: (1.) N. Brittingham & Sons, Philadelphia, 14.5 cents a pound; B. R. Elk & Co., Garfield, N. J., 13 cents a pound; Reilly Tar & Chemical Co., Newark, N. J., 10.43 cents a pound; Alex. C. Ferguson Co., Philadelphia, \$11.40 a hundred pounds; Reliable Chemical Co., Passaic, N. J., 12.5 cents; Octagon Process, Inc., Brooklyn, 18 cents a pound, and Industrial Distributors, New York, 12.8 cents a pound. These bids were received on (2): Gerson-Stewart Corp., Cleveland, 18 cents a pound; Harley Soap Co., Philadelphia, 12.4 cents a pound; R. M. Hollingshead Corp., Camden, N. J.; Crystal Soap & Chemical Co., Philadelphia, 22 cents a pound; Wm. Messer Corp., New York, 21.4 cents a pound packed in containers of 100 to about 130 pounds, and Peck's Products Co., St. Louis, 15 cents in steel containers. The following bids were received on (3.), 9,350 gallons of floor wax: Trio Chemical Works, Brooklyn, 83.2 cents a gallon; Puritan Chemical Co., Atlanta, 41.35; International Metal Polish Co., Indianapolis, \$1.58; R. M. Hollingshead Corp., Camden, N. J., 94.5 cents in returnable drums valued at \$2 each; Lanair Chemical Corp., Chicago, \$1.90; Jones Products, Cambridge, Mass., \$1.025; Flexrock Co., Philadelphia, \$1; Fox Lake Wax Co., Fox Lake, Ill., 81 cents; Janitors Supply House, Baltimore, \$1.37; Huntington Laboratories, Huntington, Ind., \$1.95; Windsor Wax Co., Hoboken, N. J., \$1.20; Buckingham Wax Co., Long Island City, N. Y., 89.4 cents; Wisconsin Chemical Products Co., Milwaukee, \$1.475; T. F. Washburn Co., Chicago, \$1.17; Cole Laboratories, Long Island City, N. Y., \$1.12; Oil Specialties & Refining Co., Brooklyn, 88.5 cents; Penetone Co., Tenafly,

N. J., \$1.11; E. I. du Pont de Nemours & Co., Philadelphia, \$1.36; Bri-Test Products Corp., Newark, \$1.12; 20th Century Paint & Varnish Co., Brooklyn, \$1.25, and Hugh Reilly Co., Washington, \$1.38.

P. Canal Soap Bids

The following bids were received in a recent opening for miscellaneous supplies by the Panama Canal purchasing office, Washington, D. C.: toilet soap (unspecified quantity), R. M. Hollingshead Corp., Camden, N. J., \$455.40; Lanair Chemical Corp., Chicago, \$356.40; Pacific Chemical Co., Los Angeles, \$732.60. In the same opening the following bid was received on an unspecified quantity of scouring powder: Wm. Messer Corp., Chicago, \$79.13.

Treasury Polish Bids

Bids on 720 quarts of furniture polish in a recent opening for miscellaneous supplies by the Treasury Department, Washington, D. C. were received from: Oil Specialties & Refining Co., Brooklyn, 30.9 cents; Tabs Laboratories, Brooklyn, 25 cents; Imperial Products Co., Philadelphia, 27.3 cents; Welmaid Manufacturing Co., Chicago, 25.9 cents; C. P. Baker & Co., Philadelphia, 41 cents; R. M. Hollingshead Corp., Camden, N. J., 27 cents, and Solarine Co., Baltimore, 21 cents.

P. O. Soap Bids

In a recent opening for miscellaneous supplies by the Post Office Department, Washington, D. C., the following bids were received on 15 gallons of liquid soap: Dixie Janitor Supply Co., Washington, D. C., \$1.50 a gallon; DuRite Chemical Co., Brentwood, Md., \$1.05. In a similar opening for automobile soap, bids were received from: Harley Soap Co., Philadelphia, item 1, 11.9 cents, item 2, 11.4 cents and item 3, 10.9 cents; Peck's Products Co., St. Louis, item 2, 14 cents, item 3, 13.5 cents; R. M. Hollingshead Corp., Camden, N. J., item 1, 24 cents, item 2, 22 cents, and item

3, 20 cents; Fisher Industries, Cincinnati, item 1, 15.5 cents; item 2, 14.9 cents and item 3, 14.7 cents; Crystal Soap & Chemical Co., Philadelphia, item 1, 20 cents, item 2, 18.5 cents and item 3, 17.5 cents; Unity Sanitary Supply Co., New York, item 1, 20 cents, item 2, 19 cents and item 3, 18 cents; and Schaffer Bros. & Powell Mfg. Co., St. Louis, item 2, 14.5 cents and item 3, 14 cents.

P.O. Rust Remover Bid

Allied Products Co., Chicago, submitted the only bid on 30 gallons of liquid rust remover in a recent opening for miscellaneous supplies by the Post Office Department, Washington, D. C. Allied's bid was \$2 per gallon, and six containers at \$2.50 each.

N. Y. Navy Bids

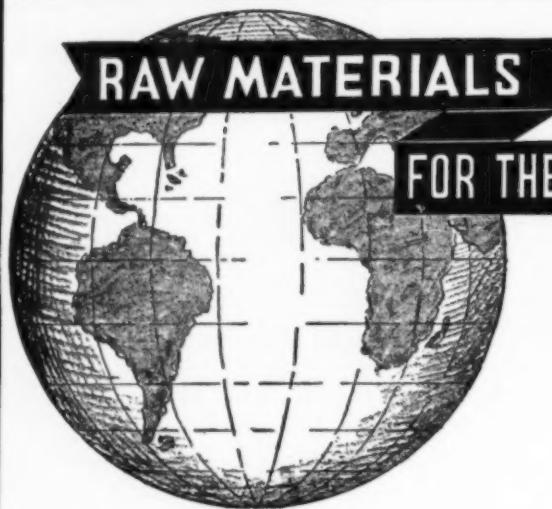
Wm. Messer Corp., New York, entered the only bid on 75,000 pounds of powdered laundry soap in a recent opening for miscellaneous supplies by the New York Navy Purchasing Office, New York. In another Navy opening of the same date these bids were received on 500 gallons of solvent-emulsion cleaning compound: Soluble Oil, Inc., Jersey City, \$1.73 a gallon, and Curren Corp., Lawrence, Mass., \$2.68 per gallon.

Peak Copra Output 1947

Urging that oil refineries step up production to meet the sharp foreign demand, Dr. Maximo M. Kalaw, general manager of the Philippine government's National Coconut Corp., Manila, recently predicted a record production of copra and coconut oil in 1947. Dr. Kalaw expects shipments of copra to reach 500,000 tons, and coconut oil to reach 250,000 tons in 1947. The present price of copra is at an all-time high of \$200 per ton, he said.

Savogran Appoints Sanders

Savogran Co., Boston, has announced the appointment of Leslie B. Sanders, Jr., as field promotion manager. Formerly assistant manager of the consumers service department of Lever Brothers Co., Cambridge, he has had extensive marketing experience throughout the United States.



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RAW MATERIAL

MARKETS

As of Jan. 2, 1947

ALTHOUGH soapers are hoping that 1947 may be the year in which supplies of fats and oils, as well as other necessary raw materials, will be easier to obtain, actually it will be mid-1948 before soap raw materials return to more nearly normal distribution, according to people who should know. With soap makers currently engaged in trying to build up their depleted stocks of fats and oils in a limited way, the factor of inadequate raw material supplies will continue to act as a brake throughout 1947, it is believed. And with fat and oil prices currently so high, any heavy stockpiling will subject soapers to the danger of heavy inventory losses. A sharp break in the price of fats and oils could easily come if one or more of the

larger or several of the smaller soapers found they had sufficient stocks to stay out of the market for a period.

On the other hand, consumer reaction to continued higher than OPA-priced soaps may cause buyer resistance, as in the case of butter, and soap prices might be forced to lower levels. This would also force back prices of raw materials, since demand would slacken. The influence of increased quantities of synthetic detergents, which are growing in popularity, and sell at prices competitive with soap, could also have the effect of forcing a drop in retail soap prices.

In 1947 the U. S. will resume her pre-war status as a net importer of fats and oils. Imports of copra by the U. S. in 1947 may well reach pre-war totals, according to recent word from

the Philippines, although there is currently a strong prospect that much Philippine coconut oil may go into the world market instead of coming to the United States as it did pre-war. Imports of most other oil-bearing materials and fats will remain low during the coming year. Total imports, according to the U. S. Department of Agriculture, probably will not be much more than half of the two billion pounds imported annually in immediate pre-war years. Domestic consumption in 1947 is not expected to increase greatly over the 1946 level, and may decline if there is a substantial accumulation of stocks.

The U. S. expects to import 240 million pounds of fats and oils in the first quarter of 1947, while exporting 138 million pounds in that period, ac-

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cording to an announcement of the U.S.D.A., dated Dec. 27. These figures are based on recommendations of the International Emergency Food Council for the international distribution of fats and oils during the first quarter of 1947. The exports consist mainly of lard, soybean oil, shortening, margarine and soap. No recommendations for the international distribution of fats and oils during the later quarters of 1947 were made by I.E.F.C. although it announced its intention to promulgate such recommendations prior to the beginning of the second quarter.

To meet our needs for palm oil, which are not covered by the I.E.F.C. first quarter recommendations, the Department of Agriculture contemplates negotiating with Belgium for about 65 million pounds of palm oil in exchange for a like amount of domestic oils.

Stocks of lard and rendered pork fat on December 1 amounted to 38,913,000 pounds, which compared with 31,513,000 pounds on Nov. 1, according to the Department of Agriculture. Lard and rendered pork fat stocks on Dec. 1, 1945 totaled 59,349,000 pounds,

as against 102,954,000 pounds for the Dec. 1 five year average. At about the same time it was learned the U.S.D.A. estimated the 1947 spring pig crop would be 53,000,000 head, compared with 52,574,000 in 1946. However, officials of the department were said to regard this as disappointingly small. On the other hand, if the 1947 fall crop measures up to 1946 fall production there would be about 84,000,000 pigs for the year. The record pig production year was 1943 when there were 74,034,000 spring pigs and 47,672,000 fall pigs.

Meat is generally expected to be in good supply throughout 1947 but not too much optimism can be anticipated on tallow production. Because of the unprecedented demand for meat, the amount of fat ordinarily trimmed from it has been lowered. Nor do authorities see any chance for immediate improvement or change in this condition.

Another important soap raw material that is expected to continue in short supply is potash. Although production has been at or near record levels, demand constantly overbalances

output. Major cause for the continuing shortage is the heavy demand for food and consequently for fertilizer for agricultural purposes. Other factors include restrictions on production in the U. S. and other countries, difficulty in replacing worn out equipment, and continuing heavy demand in all consuming industries.

A cut of 2½ cents in the price of DDT was announced by Du Pont, effective Jan. 1. The new price is 42½ cents a pound, as against the old price of 45 cents. This marks the sixth cut in the price since DDT went into commercial production in 1944.

Price advances took place recently in cinnamic aldehyde, ocotea cymbarum, artificial musk, and xylene, as a result of increased production costs. Menthol, on the other hand, has showed a tendency to decline somewhat.

Issue New AOCS Methods

Publication of the new edition of the Official Methods of Analysis of the American Oil Chemists' Society was recently announced.

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PRODUCTION SECTION

British Methods of Fat Splitting

WHILE the British have not been able to develop a continuous process of hydrolysis to compete with the methods covered by American patents, they do have some alternative methods of interest.

The various autoclave operations promise certain advantages. For example, considerable difficulty arises in all processes of hydrolysis in which water alone is the agent, through the necessity for relatively high temperatures and corresponding pressures. It would seem that some modification is possible if advantage can be taken of the catalytic action of certain acids or basic oxides, since they are used in practical autoclave processes and have effect in depressing the temperature, in one case to as low as 150°C. (302°F.).

In one operating plant, which gives some indication of the possibilities, the autoclave is charged to 70-80 per cent capacity with a mixture of 80 per cent fat and about 3 per cent of lime, with some zinc dust, which has an additional action in decolorizing fatty acids. The amount of catalytic base is about 30 per cent of that necessary to neutralize the fatty acids produced. Steam is admitted to the closed autoclave, which is maintained at 100-120 pounds per square inch, and hydrolysis proceeds, in accordance with the mass-action law, at a rate proportional to the amount of unsaponified fat at a given time. Approximately 90 per cent of the fat is hydrolyzed in 3-5 hours, but completion of the reaction to produce 98.99 per cent of fatty acids brings the total operating time to 10-12 hours. It is of course, a batch process, wherein lies its chief disadvantage in competition with continuous processes.

The main feature of this process, which may be incorporated in a continuous hydrolyzing process, is the use of catalysts. The physical conditions, however, are radically different, and successful application in a batch process by no means guarantees results in continuous process. All that is claimed is the practical possibility of depressing the temperature by a catalytic speedup of the reaction.

Uniform distribution of the catalyst throughout the reacting mass, is the major problem and specifically the maintenance of such uniformity and catalytic efficiency in the face of coagulating, fouling, and other tendencies, which have been sufficiently troublesome to cause the use of catalysis to be discontinued. Appreciable success in the prevention of these troubles has been achieved by using an emulsion of oil and water to carry particles of the catalyst in suspension, coupled with arrangements whereby the emulsion is broken down after the primary reaction stage, and the catalyst largely deposited in such a way that it can conveniently be washed and returned to the system at a point in advance of the primary reaction stage. The later stages of the complete operation are thus freed from objectionable results arising from the presence of a catalyst which has served its purpose. These later stages are mainly concerned with the separation of fatty acids and glycerine, and therefore implicitly the prevention of reversion of the splitting action.

Another Modification

In another batch process which has achieved some measure of success in practice, output has been stepped up by drawing off sweetwater when fatty acid concentration is about 50-

60 per cent, and resuming the process after adding more water. This is an approach to continuous removal of glycerine, and hence of the continuity of the hydrolysis as a whole. It has been found that the idea can be applied to the central process by employing a multi-stage arrangement of columns and separators so that each stage and the overall process is carried out continuously in smaller vessels than would otherwise be possible. The total result is a reduction in initial cost, improved instrumentation, and control, greater flexibility to meet production requirements and changes in raw materials, maintenance facility, and other lesser advantages.

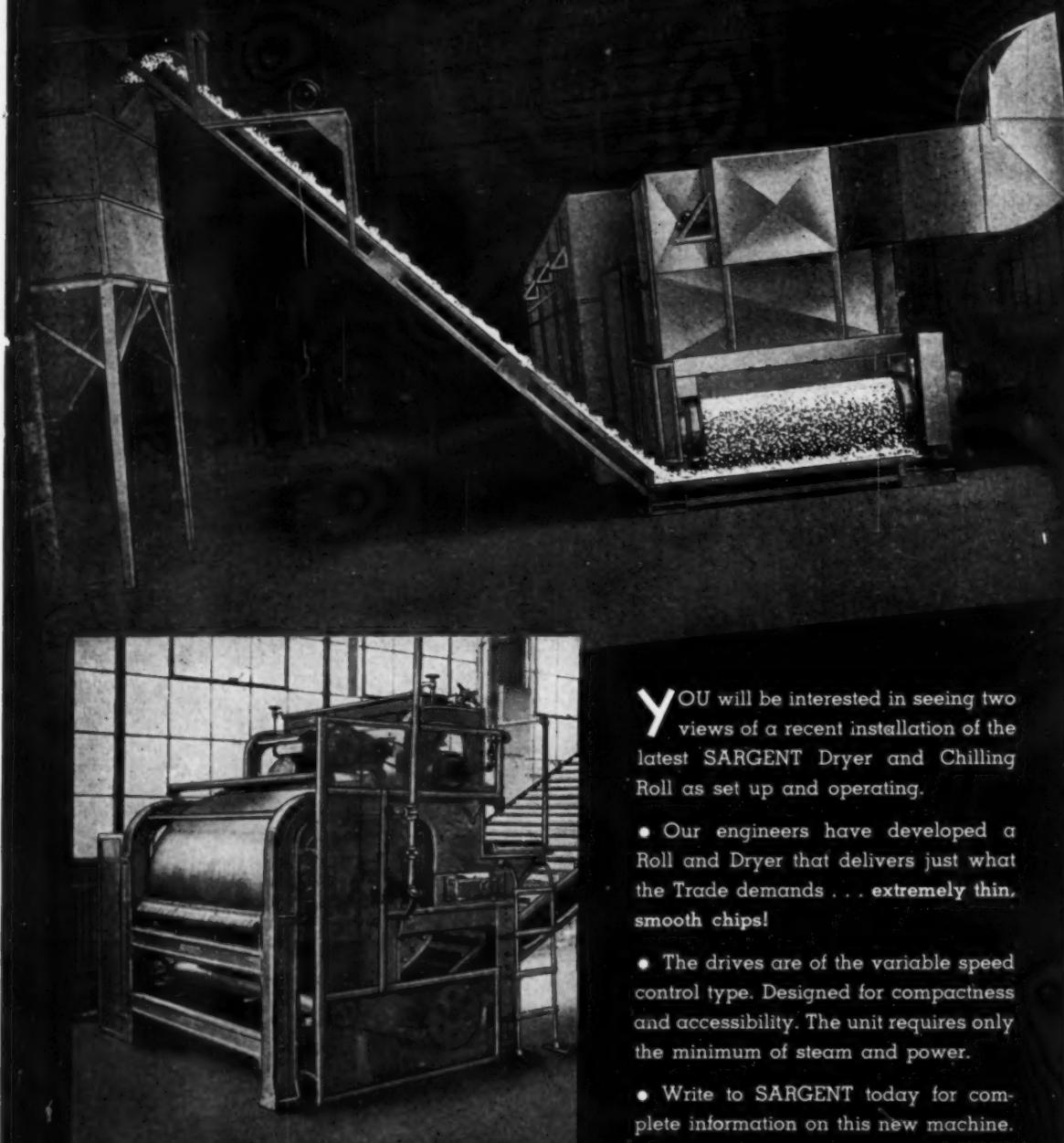
Twitchell Process

This process consists essentially of mixing the oil or fat with about one per cent of sulfo-phenyl-stearic acid or sulfo-naphthyl-stearic acid and heating the mixture by means of open steam. This has been found useful in dealing with the accumulated residues from the modified splitting process. Experiments indicate that it can be used to increase the productivity of the overall process by permitting simple handling of a higher percentage of residues and thus removing the stubborn constituents of available raw materials from the main plant. This avoids their "braking action" on the main body of fatty acids.

A Composite Process

To give a general outline of a composite process,—oilstock is first refined to the greatest extent possible consistent with the cost of the final soap and glycerine produced. The refined oil stock is emulsified with an amount of water appropriate to the finally determined conditions of the primary re-

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action zone. It is preheated through the medium of vapor from the evaporation of sweetwater. The pre-heated and pre-saturated oilstock, as an emulsion, is passed through a high-temperature reaction zone consisting of a series of injectors, in the first stage of which it is uniformly charged with a suitable solid catalyst. The temperature is close to 250°C.

From this stage the products issue into a vessel containing a large bulk of water with only a relatively low proportion of glycerine carried down by the counter-flow water passing through a layer of mixed fatty acids at the top of the vessel. At a minimum concentration, sweetwater is continuously drawn off from the bottom of this secondary reaction and separation vessel. This concentration depends primarily on the efficiency of heat recovery. Catalyst is removed from the ascending products of reaction, collected and returned to the system.

At about 70 per cent fatty-acid concentration and almost no free glycerine, the higher layers are fed contin-

uously into an inter-stage separator so designed as to facilitate maximum removal of unreacted oil from the fatty acids and its return to the system before the first reaction zone. The resulting products, consisting of about 80 per cent fatty acids, unreacted oil, water, and a small percentage of free glycerine, are passed to the second-stage hydrolyzer similar to the first, but smaller in proportion to the ratio of unreacted oil. Its capacity is such as to carry the splitting action to virtual completion when dealing with oilstock of a predetermined standard composition.

Considerable attention is necessary to the metallurgical aspects appropriate to improved service of such items as pump valves and seats. The materials and design of equipment in the main reaction zone present problems in prevention of decomposition and discoloration of fatty acids at high temperatures. Other points, such as conditions of heat transfer, require attention. John Seaman. *Soap, Perfumery, Cosmetics* 19, 821-3 (1946).

German Testing Methods

A report on the testing of textile assistants as practiced by the I. G. Farbenindustrie covers a number of methods: *Detergent efficiency* was determined by (a) treating standard soiled wool cloth in a miniature dolly-type machine. Spotting agents were tested on cloth spotted with a standard soil.

Wetting power was determined by immersing 0.4 gram circles of cotton sailcloth 3 cm. in diameter under the surface of the solution to be tested, by means of an inverted glass funnel, and measuring the time taken to sink. Auxiliary products were compared by the amount needed to give a wetting time of 120 seconds under specified conditions of pH and temperature.

Prevention of Damage during Washing. Spun rayon fabric loses much strength if washed 50 times for 30 minutes at the boil, with drying between each wash. The same fabric boiled in similar solutions for 25 hours is not greatly affected, unless air is bubbled through the solution. Thus fiber damage is due to the presence

of oxygen and probably of a catalyst such as copper or iron, found in most types of dirt. Catalyst poisons such as Trilon A or B prevent loss of strength, as do magnesium silicate and many reducing agents. Magnesium silicate is also effective in reducing damage in spun rayon due to drying at too high a temperature. W. Baird, C. B. Brown, and G. R. Perdue. *J. Soc. Dyers & Colourists* 62, 323-4 (1946).

Study of Foam

A method of measuring the foaming volume produced by high-speed whipping is described and studied in order to determine the critical factors in its operation. Data on the amount of foam or foaming volumes and on foam stabilities are given for a series of hydrocarbons, also for a range of concentrations of aqueous ethylene glycol solutions. The amount of foam formed depends on how it is produced as well as on the properties of the liquid. The stability of the foam, within specific mechanical limitations, is primarily a function of the liquid. Sydney Ross. *J. Phys. Chem.* 50, 391-401 (1946).

Floating Soap

Aeration of semi-molten soap at temperatures near enough to the solid point to retain the incorporated gas in a fine state of subdivision, yet far enough from the solid point so that the soap can flow readily and give a uniform mass, will provide floating soap. High-grade fatty acids obtained by distillation are mixed at 63°C. with a clear solution of caustic soda or with a suspension of soda ash. In the latter case provision must be made for elimination of evolved carbon dioxide which may act as an acid and prevent complete soap formation.

Aeration is controlled by constant temperature, addition of gas to a known weight of soap to obtain a desired volume, comminution of air or gas bubbles by a primary agitation and a secondary mixing machine, and subjection of the soap to a definite amount of pressure, while in the fluid condition, until it cools, to overcome expansion of the gas.

A soap made from 2 parts of prime tallow and 1 part of refined coconut oil, containing about 30 per cent of water and minimal amounts of salt and free alkali, is substantially solidified below 58.5°C. and is melted above 61°C. This type of soap expands uniformly 0.8 per cent for each 10° rise. Above 60° the rate of expansion is about 2 per cent. A soap-mixing machine and a soap mill are illustrated. A graph of the increase of specific volumes of soaps of different specific gravities with increase in temperature is given. M. H. Ittner, to Colgate-Palmolive-Peet Co. U. S. Patent No. 2,403,925.

Acid Sodium Stearates

Acid soaps intermediate in composition between neutral sodium stearate and stearic acid were crystallized at 65°F. and 90°F. from alcoholic solutions containing varying ratios of stearic acid to sodium stearate. Chemical individuals were indicated corresponding to the formulas 1:1, and 2:3, sodium stearate to stearic acid. No evidence was obtained for the existence of the 2:1 sodium stearate to stearic acid compound. F. V. Ryer. *Oil & Soap* 23, 310-13 (1946).



Synthetic floral oils . . .

PRESENT reduced supplies of natural floral essences emphasize the value of high quality substitutes. Synthetic floral essences can be used to replace the natural oils with full satisfaction and marked success in numerous products,—toilet soaps, shampoos, shaving creams, powders, creams, and many others.

In fact, in many products the newer synthetic floral essences are to be *preferred* for the manner in which they reproduce the true fragrance of the living flowers in the finished product,—not to mention uniformity of quality and odor fidelity, and their economy under present conditions.

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New Textile Detergent

Textile Chemical Division of Dexter Chemical Corporation, New York, has announced the development of "Clavodene," a synthetic detergent which may be used with either rayons, cottons, or wools. The new product is available in two forms: "Clavodene Concentrate," which is reported as a 100 per cent liquid synthetic detergent, or as "Clavodene No. 100," which is a solution of the concentrate. These products are high molecular weight amine condensation compounds and are recommended for use as detergents in neutral, mild acid, or alkaline solutions. "Clavodene" may be used in the scouring, dyeing, wettingout, and kier-boiling of wools or cottons. It is claimed to be effective for re-wetting dried goods and for cleaning operations where emulsification and dispersion of waxes or oils are important. "Clavodenies" are readily soluble in water. The amounts of product used in processing will depend on the type of operation. Amounts as little as $\frac{1}{4}$ th of "Clavodene Concentrate" on the weight of the goods have been found effective.

Selective Hydrogenation

When a mixture of glycerides of oleic and linoleic acids is hydrogenated, the linoleic groups are reduced to the mono-unsaturated stage before any appreciable amount of saturated or stearic glyceride is formed. Ease of hydrogenation appears to be connected with the presence of an active $-\text{CH}_2-$ group separated by two ethenoid groups as in linoleates, $-\text{CH}:\text{CH}-\text{CH}_2-\text{CH}:\text{CH}-$. Marine animal oils contain fewer radicals with such an active $-\text{CH}_2-$ group and do not exhibit the same selective hydrogenation. T. P. Hilditch. *Nature* 157, 586 (1946).

Wash-resistant Treatment

Benzyl benzoate, or an equal mixture of this with dibutyl phthalate, 2 ounces per uniform, in acetylene tetrachloride solution or aqueous emulsion with soap or "Tween 80" as emulsifier, protected men from mites until the uniforms had been laundered three times. The effective compounds with-

stood drying at 210°F. and were more rapidly removed by hot than by cold-water washing. R. C. Bushland. *Am. J. Hyg.* 43, 230-47 (1946).

Effectiveness of Wetting

Within a homologous series, wetting action is dependent on the state of solution, and reaches an optimum value at a definite ratio of the hydrophobic to hydrophilic component in the molecule. The state of solution can be strongly influenced by the presence of electrolytes. Introduction of a second hydrophilic group into the molecule lowers the effectiveness greatly or makes the agent ineffective. Wetting power is greatly improved if the hydrocarbon chain is branched and if the hydrophilic group is in a more or less central position. E. Gotte. *Die Chemie* 57, 67-70.

Monoglyceride Stability

Pure anhydrous glycerol and fatty triglycerides do not react appreciably below decomposition temperatures, but water or an alkaline material such as soap will catalyze the reaction. Fatty monoglycerides when free from soap or alkaline material can be distilled in vacuum with only slight reversion in the higher members of the series. Monoglycerides produced by the action of glycerol on methyl esters of fatty acids, using caustic alkali as catalyst, have an *alpha*-monoglyceride structure. J. Ross, A. C. Bell, C. J. Arrowsmith, and A. I. Gebhart. *Oil & Soap* 23, 257-9 (1946).

Washing vs. Dry Cleaning

Comparative tests on the wet-washing and chemical dry cleaning of uniform cloth and woolen goods showed that use of neutral washing agents resistant to hard water and having good cleaning properties, has made it possible to wet-wash woolen goods. By use of these agents in a neutral or faintly acid medium no greater fiber damage is caused than by chemical dry cleaning. Brief chemical dry cleaning followed by this type of wet-washing is a good procedure for woolen goods. *Viertel. Allgem. Textil-Z.* 2, 276-9; through *Chem. Abs.*

Solubilization of Dyes

The degree of solubilization of water-insoluble dyes by soap was measured at 25°C. While the amount of hydrocarbon chain in the molecule of soap or in the soap micelle increases from caprylate to myristate in the proportions of 1:1.25:1.50:1.75, solubilizing action increases disproportionately as 1:2.14:6.48:11.61. In all concentrations of potassium laurate above 0.001 Normal, addition of potassium hydroxide or of potassium salts greatly increases the amount of solubilization. This solubilization increases rapidly with increasing concentration of soap, showing that the micelles existing in higher concentrations are more effective than those formed at lower concentrations.

Extremely dilute soap solutions, especially in the presence of salt, exhibit a powerful suspending action for minute particles of dye, quite distinct from solubilization. The effect of a non-ionizing detergent such as an alkylated polyether alcohol in increasing solubility is also enhanced by the presence of potassium chloride, indicating increased association of the detergent. James W. McBain and Sister Agnes A. Green. *J. Am. Chem. Soc.* 68, 1731-6 (1946).

Tung Nut Meal

Meal containing all of the shell of tung nuts not only processed satisfactorily, but the recovery of oil from such material was somewhat higher than from material containing about two-thirds of the shell. The amount of oil expelled per hour was about the same in both cases. Kernels completely cleaned of shell expelled very inefficiently. R. L. Holmes and F. C. Pack. *Oil & Soap*, 23, 314-16 (1946).

Industrial Water

Water for industrial use is treated to inhibit deposition of hardness compounds by adding a polyphosphoric acid compound in an amount not exceeding 9 p.p.m. and not exceeding 35 per cent of the soap hardness of the water. G. J. Fink, La Grange, and O. H. Richardson, to National Aluminate Corp. Canadian Patent No. 436,534.

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LIQUID and PASTE**

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Chemicals and Allied Products



342 MADISON AVENUE • NEW YORK 17, N.Y.

PRODUCTION

Clinic

By DR. E. G. THOMSEN, PH.D.

BUSINESS expansion is a goal for most manufacturers at the beginning of a new year. Recent years have seen many a disappointment to those who were optimistic in this regard. It need hardly be recounted that scarcities of raw materials, uncertainty of costs, strikes, and government restrictions impeded even minor attempts toward recent business expansion and plant enlargements. Some were able to surmount the difficulties but healthy advancement of business was seriously deterred. Fortunately the outlook for the near future would seem to be more encouraging. Conditions generally get just so bad they can't get any worse. Then improvement sets in. Most business men and especially production men insist that they have never seen labor conditions and the raw material situation as chaotic as in 1946.

The unfortunate consequence of these conditions is that the smaller, aggressive, ambitious producers have suffered even more than the established concerns because they have been restricted in normal growth by quotas on the part of government and suppliers. In a seller's market, such as we have been experiencing for a long time, it is the old customers who get the preference. A new customer is not desirable when orders on hand for old clients cannot be filled. The alternative for these newcomers has been to pay premiums in the black market or through legitimate second hands.

Although the soap and sanitary chemicals fields have had to content with these difficult situations, still more than the normal number of new producers are springing up. This is



especially true in the field of synthetic detergents. The scarcity of soap has created a very ready market for almost any type of cleanser for which raw materials are available. These substitutes which most frequently combine an alkali with a wetting agent lead the field. We know of one middlewestern town of 20,000 population where six small companies of this type are operating. All are doing a fair volume of business, most of it within a radius of 300 miles. The introduction of the newer type of insecticides, weed killers, rodenticides, and disinfectant raw materials has also drawn newcomers into the market. Business has been easy to get if one can secure the raw materials to make into finished goods.

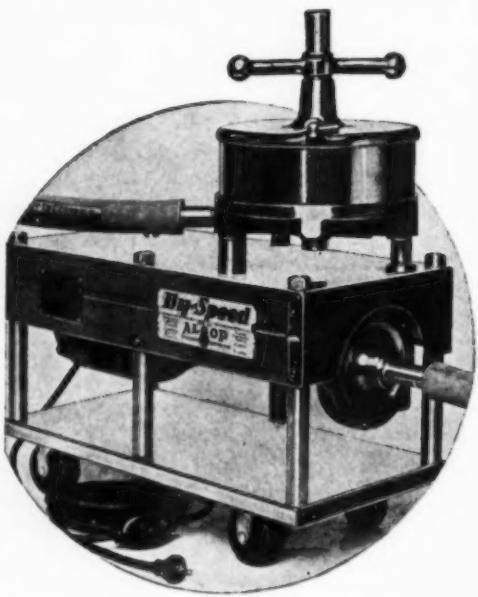
In boom times the urge to expand facilities to take care of increasing business is greater than in normal times. Many a business man lets his optimism run away with him in such times and later finds himself with lots of plant and equipment with an in-

sufficient volume of business to support it profitably. There are two conditions which cause more business failures than any other. The first is lack of capital, the second is over-expansion. Right now capital is not too difficult to raise, but expansion projects are not easy because of scarcity of and restrictions on machinery and building materials. In the long run such a condition may be more of an advantage than a disadvantage to future operations.

Plant expansion falls into three categories, under-expansion, over-expansion, judicious expansion. At the moment conditions have produced more under-expansion than has been the case for a long time. In spite of the great expansion during the war years, we lack materials, machinery and labor for normal production of many items. In most industries conditions are worse than in war years. Many who looked for relief from labor shortages find this shortage more critical. Those who planned plant improvements through the purchase of new machinery and equipment find it difficult even to obtain repair parts. To consider building plant additions has been taboo because building materials are not even to be had to build much-needed dwellings. Many wonder what has become of the myriad of war plants built to make war materiel in great quantities. Manufacturers who have sought to purchase such plants cannot locate any suitable ones for sale. As a result we find many manufacturers with more immediately available business on hand than their undersized plant and equipment permits them to turn out. They are uncomfortable and unhappy in their cramped quarters. In spite of this condition they are better off than if they were operating a plant that has been over-enlarged.

The over-expanded plant is a headache even in prosperous times. This type exhibits itself not only in too much plant but in equipment and machinery that have a capacity beyond the production schedule. It is comparable to a small car-size motor in a 10-ton truck. The motive power to keep the plant in operation is insufficient. Over-expansion finds its mo-

Filtration Perfection



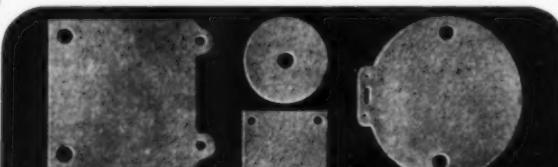
YOUR product may be uniformly clean and clear and possibly each batch duplicates the other in unvaried clarity and eye appeal, but are you getting the utmost of filtration perfection? Are you meeting production requirements? You can with an Alsop "Sealed-Disc" Filter! What's more, you can obtain these superior results and probably with considerable savings in production time and costs.

Alsop "Sealed-Disc" Filters do just that. They are available in a broad range of sizes and capacities to meet varied filtration requirements and can be adapted to various processing methods. Also, they are completely sealed, loss of liquid from leakage or dripping, or even by evaporation, is entirely eliminated.

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tive most often in over-optimistic predictions of normal output based upon periods of prosperity. In other cases, ego, promotion for selfish reasons, and production schedules based upon supposition or anticipation rather than true facts are the cause. Over-optimism that advertising will put over a product is often the cause. These conditions must be guarded against, and since production departments are often saddled by the mistakes of others in these regards, the wise production man assumes a conservative attitude toward expansion.

The safest course in contemplating expansion is the judicious one. This may be considered the mean between under-expansion and over-expansion. This course follows the plan of laying out plant and equipment in such a way that additions may be made gradually, if and when necessary. Ample plans are made for future expansion, but instead of jumping overboard at once, the plans are consummated by degrees. The conservative plant manager or owner who follows this course may lose some business in boom periods, but is willing to run overtime or in several shifts with a smaller plant. It is troublesome at times, but in the long run when recessions arrive he is better prepared to weather the storm of restricted output and usually comes out ahead. Right now is a good time to consider judicious plant expansion rather than over-expansion.

From the Advertising Pages

Surface active or wetting agents have been in very large demand during the current soap shortage. It is not surprising that many users have been unable to obtain these items in the desired volume. In view of these shortages it is interesting to note that purveyors of wetting agents continue to have great confidence in their future and exhibit aggressive sales policies. In a recent issue of this magazine the following products were advertised.

Oronite Chemical Co., San Francisco, features "Oronite" detergent, their surface active agent of the alkyl aryl sulfonate type. This wetting agent is a neutral product resulting from a combination of a strong acid

with a strong alkali that maintains a high degree of surface activity in many media like acid or alkaline solutions and hard waters. It cleans by physical action without any harsh chemical reaction occasioned by hydrolysis, and hence may be used on the most delicate materials. It comes in both dry and slurry form. Supplies are constantly increasing. Samples are available by writing for them.

"Nacconol NR," another alkyl aryl sulfate, has been well known for several years. National Aniline Co., New York, has an interesting booklet describing the "Nacconols" which should be in all chemists' libraries. It may be had upon request. The makers stress that "Nacconol NR" gives economical wetting, emulsifying, foaming, dispersing and washing properties in hot or cold solutions. Any problems in using this product may be taken up with their technicians.

Ultra Chemical Works, Paterson, N. J., emphasize the power of their wetting agents, "Sulframins DT," "LW" (Powder), and "DR" as well as "Ultrapone," a liquid emulsifying agent for making water-in-oil emulsions. The "Sulframins" are powerful detergents effective in dilutions as low as 1 to 10,000, according to this company. The LW type is designed for water below 50°C. and is especially recommended for car washing compounds. Either the LW or DT types may be used as a general detergent. The DR quality has the appearance of a clear sulfonated oil and is instantly soluble in hot or cold water. It is useful for shampoos, liquid soap and liquid cleansers.

Eavenson Chemical Co., New York, features a bead form of alkyl aryl sulfonate with a high percentage of active ingredient and a bulkiness 10 times that of soda ash. This company carries a full line of synthetic detergents.

Seaboard Distributors, Newark 2, N. J., offer samples of their "Mercol ST," a synthetic detergent bead and "Sulframin DHL," a liquid concentrate. Further information is available upon request.

Miranol Chemical Co., Irvington, N. J., invites interested parties to write them for technical literature

samples and prices of their line of synthetic organic detergents.

Alrose Chemical Company, Providence, R. I., call attention to "Alrosol," a mild, pure, salt-free product which is water miscible and oil soluble. It may be used with soap and possesses a high range of compatibilities. Metal salts will not precipitate it. Full information is available.

These are but a few of these products on the market. Numerous other surface active agents are available from other sources. Those who have not done so and are interested in the subject of synthetic detergents should read J. W. McCutcheon's article on "Synthetic Detergents vs. Soap" in the September 1946 issue of *SOAP and SANITARY CHEMICALS*.

Wetting agents will undoubtedly displace quite a bit of soap especially since they are obtaining a foothold in a period of soap shortages. To buyers of these products a word of advice is in order. Do not always judge them by cost. In most cases inert materials like sodium sulfate or water are present. The amount of active ingredient may at times result in the higher priced product actually being the cheaper one.

International Wax Refining Co., Brooklyn, offer "Palmeto," a new wax, as the solution for carnauba wax problems. A formula is presented for a liquid wax emulsion made with this wax and some carnauba. It is claimed this product is low in cost, stable, non-tacky, and quick drying to a bright finish. Working samples are available.

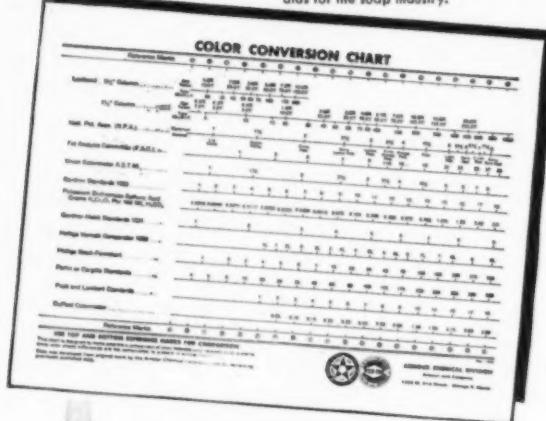
Another item that caught our eye was an announcement by the Fluorine Division of General Chemical Co., New York, regarding "Genetrons." These are a series of aliphatic fluorine compounds, of varied properties. They promise to be useful as aerosol dispersants, refrigerants and organic solvents. Further information regarding the individual "Genetrons" will be forthcoming.

Gyrating Screens

Simplicity Engineering Company, Durand, Michigan, have been building screens for almost a quarter of a century. Their gyrating screens are used in chemical plants, paper mills, food product plants and gener-

Yours without charge

No. 1 in a series of Armour reference aids for the soap industry.



HANDY COLOR CONVERSION CHART

Quick, accurate comparisons between any of the 12 major color density scales!

This 8½" x 11" chart, printed on sturdy cardboard, covers the complete commonly-used color density range.

Every man in the soap industry who buys, tests, uses or sells fat and oil products will recognize this chart as an invaluable reference aid to the laboratory, technical, production and purchasing departments. Your copy will be mailed upon request.

PROGRESSIVE RESEARCH and wise experimentation have always led the way to product improvement. That's why we suggest that you explore the many ways that the Neo-Fat fatty acids can improve your products. Armour's Technical Service Department will be glad to recommend the Neo-Fat best suited to your needs.

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at industrial plants. They are used for dewatering purposes as well as sifting of dry materials.

An interesting application is an installation for screening powdered soap. A 4' x 8' single deck screen with 1/16" slotted opening cloth is used for this purpose. Such a screen has a maximum capacity of over 30,000 lbs. per hour. Only four per cent of the tailings come over the screen, which is an extraordinary result with soap powder, which generally has a tendency to ball up and blind the screen. In this case the balls break up, preventing any blinding. All the fine material passes through, instead of passing off as tailings in ball form.

Laboratory Mill

Combustion Engineering Co., through the Raymond Pulverizer Co., make a compact pulverizer for grinding small lots of materials, from a few ounces to several pounds. The mill is motor driven and has a hand operated screw feeder. It handles practically all dry materials like chemicals, colors, and soft non-metallics. Abrasive materials like quartz cannot be ground. The same character, finished material is produced as by the larger Raymond mills. This mill is designed for intermittent grinding of up to 10-lb. batches. Five interchangeable screens are available, with different size perforations so that finished powders from 20 mesh upward to very fine ones can be produced. A full description may be had by requesting the company's Bulletin No. 53.

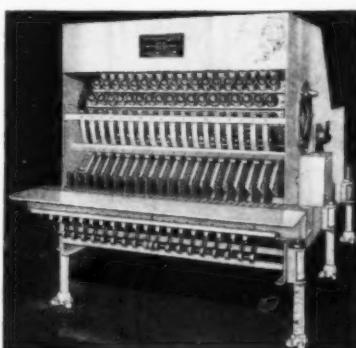
New Shriner Filter Booklet

A new booklet, "Shriner Filter Presses—A guide of Better Filtration," recently released by T. Shriner & Co., Harrison, N. J., presents a discussion of filtration and offers detailed information on operation, types, of filters, materials of construction, determination of requirements and costs. The information includes a comparison of side, corners, bottom and top feeds as well as open and closed delivery filters. Other subjects of filtration interests are covered such as washing and filter cake, drainage surface from plates, control of leakage, and high pressure filtration. A number of illustrations of closing devices are shown, as well as

charts for calculating filter area and determining probable costs. Copies of the booklet may be obtained from the company.

New U. S. Bottle Washer

A new bottle washer designed to handle large quantities of bottles at high speed has recently been an-



nounced by U. S. Bottlers' Machinery Co., Chicago. Called the "Load-A-Matic," it can be adapted for washing any standard size round, 8 or 16 panel bottle. It has a capacity of 6,000 to 18,000 bottles per hour. Water consumption is said to be held to a minimum.

New C & C Emulsion Booklet

A new edition of the booklet, "Emulsions," was recently released by Carbide and Carbon Chemicals Corp., a unit of Union Carbide and Carbon Corp., New York. The new booklet has many additions and corrections and includes descriptions of the uses of "Tergitol" wetting agents, "Carbowax" polyethylene glycol emollients, and "Cellosize" hydroxyethyl-cellulose thickener in new emulsion formulae. The use of a number of new amine soaps and cationic-active dispersants is described. The 72-page booklet presents over 113 practical formulae and methods for preparing cosmetic and industrial emulsions of oils, waxes, fats, and greases. Copies of the booklet may be obtained from the company.

Research Labs Listed

The eighth edition of "Industrial Research Laboratories of the

United States," was recently published by National Research Council, National Academy of Sciences, Washington, D. C. The 415-page book is a compilation of pertinent information on 2443 industrial and consulting research laboratories of the United States and includes such information as president of the organization, location of laboratories, research staff and activities and library facilities. The appendix includes a list by states of universities and colleges offering research service to industries.

Trade Mark Law Booklet

Trade mark registration will become a necessity in most cases when the Lanham Act becomes law next July, according to the Research Institute of America, which has just issued a 56-page analysis in booklet form, "Preparing for the New Trade-Mark Law." The booklet covers ownership and use of trade-marks; qualifying a trade-mark for registration; trade-marks in foreign trade; and steps to be taken before the law goes into effect in July. The booklet would appear to be of considerable value to anyone concerned with trademarks and its 50 pages have much detailed information regarding the legal pitfalls and interpretations associated with trade-marks. Incidents are related which serve to explain the law. The analysis, prepared by Walter J. Derenberg, attorney and authority on trade-mark law, may be obtained from Research Institute of America, Inc., 292 Madison Ave., New York 17, N. Y.

Forms Scheer Chemical Co.

The formation of Scheer Chemical Co., New York, on January 1st, 1947, was recently announced by Walter E. Scheer formerly vice-president of Amecco Chemicals, Inc., New York. The new company will act as manufacturers' agents, and technical sales and market development consultants for chemical manufacturers in the fields of surface-active agents, fine chemicals, plastics and plasticizers. Offices are located at 60 East 42nd St., New York 17, N. Y. Mr. Scheer was at one time employed by Commercial Solvents Corp., in market development and technical sales.



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for Soaps, Cosmetics
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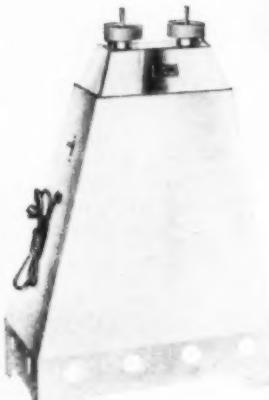
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Deodorant Sprays**

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Step Up

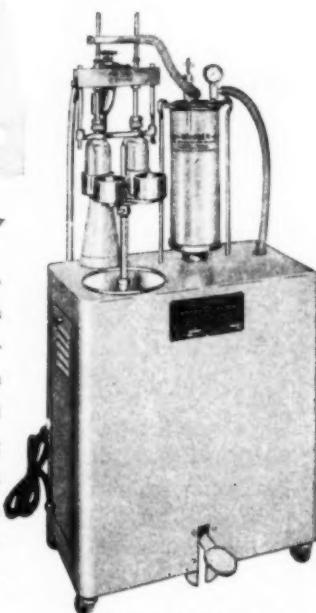
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The E-Z Two-Tube Cleaner

WHEN used in combination, these machines can clean and fill 50 to 75 gross of containers per 8-hour day. Both units are simple to operate and are automatic except for placing or removing containers. Both machines handle two containers simultaneously. Both are portable—simply plug into lighting circuit.



Model B-2 Semi-Automatic Vacuum Filler

The E-Z TWO-TUBE CLEANER efficiently removes foreign matter from new containers by means of compressed air. Floor space 27" x 14". Write for Bulletin.

THE MODEL B-2 SEMI-AUTOMATIC VACUUM FILLER is the new, improved filling unit that handles most any liquid from any size supply containers and fills any containers from AGST size to 4" diameter. Has outstanding new features. Write for Bulletin.

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PRODUCTS AND PROCESSES

Metal Degreasing Cleaner

A cleaning composition designed to remove oil, grease, and foreign matter generally from metals has the essential constituents as listed:

	Per Cent
Solvent (2/3 ethylene dichloride, 1/3 propylene dichloride)	20
Soap (vegetable oil soap)	10
Penetrant (tar acid oil—not less than 50% tar acid)	33
Coupling agent (butyl alcohol)	8
Antifoaming agent (denatured alcohol)	6
Preservative (finely powdered rosin)	1
Blending and thinning agent (sodium dichromate)	2
Water (sufficient to dissolve the soap)	20

The cleaner is said to require no special equipment, is not injurious to metals (including those subjected to anodic treatment) and may be used

as a surface cleaner or immersion bath. The soap content is used for its detergent action, with a vegetable soap preferred because it dissolves more readily in cold water. The solvent

breaks the bond between the metal and foreign matter, which settles out as a sludge. G. W. Gregg. U. S. patent 2,386,789.

Steam Cleaning Detergent

For industrial steam-cleaning operations, a new heavy-duty alkaline-type detergent has been announced by Oakite Products, New York. It is intended for use in cleaning machinery and equipment parts for subsequent repair and overhaul, preparing equipment surfaces for repainting or refinishing; and also for cleaning equipment too large for tank immersion, paint stripping etc.

ishing aluminum, stainless steel, copper, brass, silver, and other metal surfaces. J. D. Morgan and R. E. Lowe, to Cities Service Oil Co. U. S. Patent No. 2,403,821.

Modified Alcohol Sulfate

A new powdered synthetic detergent which is a modified alcohol sulfate is produced by Alrose Chemical Company, Cranston, R. I. It is an excellent cleaner for either wool or cotton, and can be used in hard water, sea water, and dilute acetic acid. In aqueous solution it is neutral in reaction. The product contains 15 per cent of active ingredient, 85 per cent of inorganic salts. Its applications are for washing fine goods, as a household cleaner, and as a rug and upholstery shampoo. *Rayon Textile Mo.* 27, No. 9, 160 (1946).

New Synthetic Detergent

A new detergent and dyeing agent was announced late in December by the textile chemical division of Dexter Chemical Corp., New York. "Clavanol," is reported to be a non-toxic synthetic detergent of a high molecular weight condensation product of polyethylene glycol, and is available in two types: "Clavanol Concentrate," which is 100 per cent "Clavanol," and "Clavanol D," which is a solution of the concentrate. They are

soluble in warm or cold water and are resistant to lime, mild acid, and alkali. "Clavanols" are said to have high emulsifying properties and to be useful for many types of emulsification processes where non-toxic properties are desirable. They may be used in conjunction with both cationic and anionic processing agents. The company suggests that "Clavanol" can be used in the emulsification of DDT. The products are said to have good peptizing effect on lime soaps and other insoluble materials.

New Low in Soap Fats Use

The use of fats and oils for soap-making reached its lowest point of the year during the third quarter (July thru Sept.) of 1946. During this quarter, the reported consumption of primary fats and oils for soap declined to 348,272,000 pounds from the 406,619,000 pounds used during the second quarter, according to figures released in mid-December by the Bureau of Census, U. S. Dept. of Commerce.

Inedible tallow, the leading soap fat, showed a steep decline from 247,898,000 pounds used in the second quarter to 192,575,000 pounds used in the third quarter, which points out the effect of the summer's severe meat shortage on the amount of animal fat used by soapmakers. Consumption of grease in the third quarter was 80,516,000 pounds as compared with 96,647,000 pounds in the second quarter. Third in the fat consumption list was coconut oil of which the soap industry was reported to have used 23,982,000 pounds of refined and about the same amount of crude for a total of about 47,380,000 pounds during the third quarter as compared with a use of 37,000,000 pounds in the second quarter.

Use of babassu oil dropped off as coconut oil from the Philippines became more available and the figure recorded for its use in soap-making during the third quarter was 6,514,000 pounds refined and crude as compared with 9,195,000 pounds used during the second quarter. Reported use of fish oil for soap in the second quarter of 1946 increased threefold with 12,472,000 pounds used as against 4,387,000 pounds used in the previous quarter.

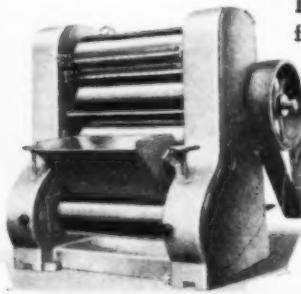
Dye Assistant and Scour

A new dye assistant and scouring agent made by the Dexter Chemical Corporation is a blend of potassium salts of sulfated amide condensation products of straight-chain acids. The two carbon chains in each molecule vary from 10 to 18 atoms in length. The shorter chains give high wetting power and better rinsability than that of soap; the longer chains give good detergency and dye-leveling properties. M. Mytelka. *Rayon Textile Mo.* 27, No. 11, 93 (1946).

Dry Polishing Cloth

Flannel cloth impregnated with oleic acid 4-11 per cent, triethanolamine 1-4, light magnesia 20-60 precipitated calcium carbonate 15-45, and infusorial earth suspended in a volatile vehicle such as Stoddard solvent 10-30 per cent, can be used for dry pol-

THE IMPORTANCE OF STAMINA



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THE great locomotives that keep heavy freight loads moving over steep mountain grades have an assignment that calls for staying power . . . an assignment that demonstrates the importance of stamina.

In soap mills it is particularly important. That is why so many of the country's leading soap manufacturers have learned to depend on Lehmann Mills for long and trouble-free service. Precision engineering of the highest order, superior craftsmanship and the finest of materials combine to give Lehmann Mills outstanding staying power under even the heaviest of production schedules.

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Its ODOR Terrifies!
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in Soya-Bean and
Vegetable Plastics
to protect them
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Board to keep
Verm from
Buildings.

Harmless to Human
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Domestic Animals.

USE SCARAT
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Made under laboratory control
and tested to conform to highest
standards of strength
and potency.

Results assured by
careful check of
quality.

A BOON to the PEST CONTROL
Profession for STARVING out
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Invaluable for Warehouses,
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Complete copies of any patents or trade-mark registration reported below may be obtained by sending 50c for each copy desired to Lancaster, Allwine & Rommel. Any inquiries relating to Patent or Trade-Mark Law will also be freely answered by these attorneys.

No. 2,410,497, *Disinfecting and Preserving Composition*, patented November 5, 1946, by Winfrid Henrich, Rodleben, near Dessau-Rosslau, and Wilhelm Kaiser, Dessau, Germany, vested in the Alien Property Custodian. A disinfecting and preserving agent comprising a 1-hydroxy-5,6,7,8-tetrahydronaphthalene having a halogen substituent in the 4-position.

No. 2,410,518, *Production of Glycerin From Sugar by Yeast Fermentation*, patented November 5, 1946 by Carl A. Neuberg, New York and Irene S. Roberts, Fieldston, N. Y. In the process of producing glycerine by fermentation of sugar with yeast, in which the reduction of acetaldehyde formed intermediary during the fermentation process is prevented by known means, the combination of the steps comprising generally the use of commercial brewers' yeast in an amount exceeding the amount of yeast merely sufficient for the fermentation of the given amount of sugar; continuously stirring the reaction mass; bubbling added carbon dioxide therein; and maintaining a pH of 7.2-7.5 during the reaction.

No. 2,410,862, *Pest Control*, patented November 12, 1946 by Euclid W. Bousquet, Wilmington, Del., and Hubert G. Guy, Penn Township, Alle-

gheny County, Pa., assignors to E. I. du Pont de Nemours & Co., Wilmington. An insecticidal and insectifugal composition containing as an essential active ingredient an aryldithiobiuret and a carrier therefor.

No. 2,411,090, *Process of Preparing a Detergent Composition*, patented November 12, 1946 by Edwin S. Garverich, Upper Darby and William L. Martin, Philadelphia, assignors to The Pennsylvania Salt Manufacturing Co., Philadelphia. The process of preparing a detergent composition containing by weight 5 per cent-25 per cent tall oil, 25 per cent-45 per cent of an alkali metal subsilicate capable of saponifying said oil, at least 5 per cent of an alkali metal phosphate and 25 per cent-75 per cent of bentonite which comprises mixing the oil and clay to cause absorption of the oil by the clay and then admixing the alkali metal subsilicate; and wherein at least the admixing of the subsilicate is effected during cooling; and further cooling the product formed.

No. 2,411,253, *Pest Control*, patented November 19, 1946 by Albert L. Flenner and Norman E. Searle, Wilmington, assignors to E. I. du Pont de Nemours & Co., Wilmington. A parasiticidal composition containing as an essential active ingredient the compound having the formula R-S-X-Y in which R is a thiazole attached at the 2-position, X is a methylene radical bearing at least one hydrogen and Y represents an aliphatic substituted or unsubstituted amino radical linked through amino nitrogen to X, and a carrier therefor.

No. 2,411,443, *Manufacture of Soap*, patented November 19, 1946 by Lyle J. Lofdahl, Chicago, Ill., assignor to Industrial Patents Corp., Chicago. A stable soap product, comprising soap and a small amount of stannic borate stabilizer incorporated therein.

No. 2,411,468, *Manufacture of*

Soap, patented November 19, 1946 by Leopold Sender, Baltimore, Md., assignor to The Sharples Corp., Philadelphia. In the manufacture of soap, the process comprising continuously converting fat into soap by mixing said fat vigorously with a saponifying re-agent at a saponifying temperature during passage through a mixing zone graining the soap resulting from said mixing step, thereafter passing the resulting mixture of grained soap and aqueous phase through an aging zone in which the mixture is churned by agitation of a degree less than that maintained in the preceding mixing zone, passing aqueous phase and grained soap from said aging zone into a second mixing zone in which they are agitated more vigorously than in the aging zone until substantially uniform dispersion of the soap is obtained, and finally passing the mixture resulting from agitation in said last-mentioned mixing zone to a centrifugal separator and thereby separating the grained soap from aqueous phase.

No. 2,411,469, *Manufacture of Soap*, patented November 19, 1946 by Leopold Sender, Baltimore, Md., assignor to The Sharples Corp., Philadelphia. In the manufacture of soap, the process comprising continuously converting fat into soap by mixing said fat vigorously with a saponifying reagent at a saponifying temperature during passage through a mixing zone, graining the soap resulting from said mixing step, thereafter passing the resulting mixture of grained soap and aqueous phase through an aging zone in which the mixture is churned by agitation of a degree less than that maintained in the preceding mixing zone, removing a part of the aqueous phase by gravity settling through said aging zone, passing aqueous phase and grained soap from said aging zone into a second mixing zone in which they are agitated more vigorously than in the aging zone until substantially uniform dispersion of the soap is obtained, and finally passing the mixture resulting from agitation in said last-mentioned mixing zone to a centrifugal separator and thereby separating the grained soap from aqueous phase.

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Surface Interaction

Sodium stearate readily displaces sodium normal-tetradecyl sulfates from the surface layer of aqueous solutions as shown by the adverse effect of sodium stearate on foams from solutions of sodium tetradecyl sulfates. The compounds having the sulfate group furthest removed from the end of the hydrocarbon chain were most easily displaced. The results of Dreger which showed that the detergency of isomeric sodium alkyl sulfates diminishes as the sulfate group recedes from the end of the hydrocarbon chain were confirmed in the respect that the more readily displaced surface-active materials may be expected to have poor detergency properties. P. A. Winsor. *Nature* 157, 660 (1946).

Micellar Association

Two soaps soluble in benzene, hexanolamine oleate and hexanolamine caprylate, are found to form micelles in this solvent. The non-electrolytic detergent, nonaethylene glycol monolaurate, consists of simple

molecules in benzene, but is associated in cyclohexane containing 0.43 per cent of water. E. Gonick. *J. Colloid Sci.* 1, 393-5 (1946).

Solubilization by Soap

The micelles of aqueous solutions of detergents exert a solubilizing effect on water-insoluble substances. From a study of the solubilization of para-dimethyl aminoazobenzene in solutions of detergents, it is concluded that measurement of solubilization affords a method for evaluating critical concentrations of a detergent.

Moreover, such experiments have shown that two classes of detergents can be differentiated; (1) the fatty acid soaps typified by sodium laurate, and (2) another class typified by sodium rosinate. With detergents of the first type, the solubilizing power is strictly proportional to the concentration of micellar soap. With detergents of the second type, solubilization occurs at all concentrations. I. M. Kolthoff & W. F. Johnson. *J. Phys. Chem.* 50, 440-2 (1946).

Fatty Acids of Palm Oil

The crude fatty acids obtained from crude palm oil by hydrolyzing an oil emulsion with water vapor in the presence of the Twitchell reagent had a free acid number of 187, saponification number 197, iodine number 67, melting point 41°C., and solidification point of 42°C. The acids distilled in vacuo had a free acid number of 189, saponification number of 198, iodine number of 60, melting point of 42.5°C., and solidification point of 42°C. The difference in the free fatty acid number and the saponification number is attributed to the formation of oxy-acids and lactones. J. R. Garrigue. *Bull. matières grasses inst. colonial Marseille* 28, 12-16.

Sulfonated Compound

A sulfonation product is exemplified by such compounds as sulfonated methyl laurate, palmitate, or stearate. D. Price and R. Kapp, to National Oil Products Co. Canadian Patent No. 436,878.

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Cleaning the Washwheel

For best results and economical use of soap the laundry washwheel must be kept free from lime soaps and other deposits. In the average 42 x 84 washwheel, this can be accomplished by running in 2-3 inches of cold water, then pouring in slowly one pint of sulfuric acid, holding the container close to the water level. Close the doors and start the washwheel. Turn on steam, heat to 180°F., and let run 15-20 minutes. Drain, flush with hot water several times, then run in five inches of hot water, add five pounds of alkali, and run for 10 minutes. Repeat with alkali if suds have overflowed in the previous operation. Rinse with hot water, followed by cold. H. M. Wiley. *The Laundryman*, No. 8, 1946.

perature and the temperature at which the system forms an isotropic liquid. The results suggest a theoretically valid phase diagram. T. M. Doscher and R. D. Vold. *J. Colloid Sci. I*, 299-312 (1946).

Oil Purification

Vegetable or animal fats and oils are purified by vacuum treatment with a solid adsorbent with agitation. The mixture is heated in the range 100° F. higher or lower than the temperature where incipient distillation occurs, at a vacuum of 28-30 inches of mercury. When low-boiling impurities have been separated by distillation, the charge is cooled and filtered to remove the solid adsorbent, which may be bone char, fullers' earth, carbon black, or the like.

For treating coconut oil, the distillation range is 150-300° F., for soybean oil 250-450° F., and for palm oil 200-400° F. The final product has better color and a lower ash content. R. P. Dunmire, to Buckeye Laboratories Corp. U. S. Patents No. 2,401,338 and 2,401,339.

Textile Bleaching

An alkaline solution of a hypochlorite, an alkali metal chlorite such as sodium chlorite, and an organic detergent, such as sodium sulfo-ethyl methyl oleamide, sodium borosulfate of octadecenyl alcohol, or a synthetic organic compound, is circulated through the material at 85-95°F. until it is bleached. The temperature of the solution is then raised to about 200°F. and the circulation is continued long enough to scour the material. The ratio of hypochlorite to chlorite in the solution is 1.5:1 based on available chlorine. The pH is maintained at 8-11. G. P. Vincent, A. L. Dubeau, and J. F. Synan, to Mathieson Alkali Works. British Patent No. 566,291.

Sodium Stearate-Cetane

Different compositions of the binary system, sodium stearate-cetane, were investigated with the polarizing microscope, and the change in appearance recorded between room tem-

Tomato Seed Oil

Tomato seeds contained 27.2 per cent of oil having the constants: d_20^{20} 20.918, n_2^{∞} 1.4710, saponification number 197, acidity as oleic acid 23.2, iodine number 115, and unsaponifiable 0.4 per cent. M. Carriere. *Inds. corps gras* 2, 152-4 (1946).

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Critical Concentrations

In a new titration method, dyes may be used for determining the critical concentration for micelle formation in soap solutions. The following dyes may be used as indicators with cationic soaps: Sky Blue FF, Eosin, Fluorescein, Dichlorofluorescein, and acidified 2,6-dichlorophenol indophenol. For anionic soaps, pinacyanol chloride and Rhodamine 6G may be used. The critical concentration for dodecyl ammonium chloride is 0.0130 molar, and for decyl trimethyl ammonium bromide 0.065 molar.

As an example, the color change of Rhodamine 6G yields orange fluorescent solutions in the presence of micelles of anionic or ordinary soaps. When the soap concentration is reduced, the color changes to red, and the fluorescence disappears almost entirely at the critical concentration for the disappearance of micellar soap. M. L. Corrin and Wm. D. Harkins. *J. Chem. Physics* 14, 641 (1946).

Surface-tension Method

The practical technique of the vibrating-jet method for determining surface and interfacial tensions at fresh surfaces is described in detail. The apparatus can be readily assembled in any laboratory from available equipment. The method has been so simplified that it is now within the scope of routine laboratory work. Previously published data are supplemented by interfacial-tension data for the systems: carbon tetrachloride-water; water-ether; water-petroleum ether; and water-benzene. C. C. Addison. *Phil. Mag.* 36, No. 253, 73-100.

New Sulfonic Acids

A molecule of olefin containing more than 8 carbon atoms is mixed with 2-4 molecules of powdered sulfur and heated to 150° C. for 3-8 hours. The sulfurized olefine, consisting of a dark brown viscose oil, is hydrogenated at 125-200° C. under 1500-2500 pounds per square inch pressure for 3-8 hours in the presence of a catalyst such as cobalt polysulfide. The reaction product is distilled to obtain the monothiol, which is oxidized to sul-

fonic acid by 70 per cent nitric acid. The sulfonic acid is neutralized to give a surface-active product. A. M. Alvarado, W. A. Lazier and J. H. Werntz, to E. I. du Pont de Nemours & Co. U. S. Patent No. 2,402,587.

Alkaline Cleaning of Metal

Large variations in cleaning efficiency may be observed as a result of changes in the surface conditions of the metal being cleaned. Oil removal by 1.5 per cent of sodium orthosilicate plus 0.15 per cent of a surface-active agent is greatly influenced by the presence of a film that is probably metal oxide, and by the smoothness of the surface. The effect due to the oxide film is different for different types of oils. Mineral oil is removed far more readily when the oxide is present, whereas fatty oil containing free fatty acid is removed more readily when it is absent. The presence of a cold-rolled or worked surface seems to be more important in determining cleaning performance than gross surface roughness, within a limited range. Ease of cleaning diminishes as the roughness of the surface increases. After a certain level of considerable roughness, the effects apparently due to the oxide film are lost. S. Spring and L. F. Peale. *Ind. Eng. Chem.* 38, 1063-6 (1946).

Quaternary Ammoniums

Quaternary ammonium salts used as germicides and surface-active agents, are colloidal electrolytes in aqueous solution. A study of dodecyl benzyl dimethyl ammonium chloride shows that in the concentration range where micelles are formed, about 60 per cent of the chloride ions are combined in the micelles of the salt. The concentration of simple cations falls as the salt concentration rises in this range. H. F. Walton, E. N. Hiebert, and E. H. Sholtes. *J. Colloid Sci.* 1, 385-92 (1946).

Soap Making in Martinique

Most of Martinique's demand for laundry soap is now being met locally. Three small soap plants account for the bulk of the manufacture of crude laundry soap.

Refractive Indices of Soaps

Refractive indices were obtained for varying concentrations of a cation-active detergent, lauryl amine hydrochloride, and for an anion-active soap, potassium laurate. In the case of the former the refractive index changes from 1.3328 to 1.3361, and in the case of the latter from 1.333 to 1.3356, over a concentration range from 0.1 to 2 per cent. The refractive increment reaches a maximum at 0.29-0.30 per cent of the lauryl amine compound, and at 0.61-0.62 per cent of the potassium soap. If these and similar discontinuity points represent a formation of a new phase in soap solutions, it may prove possible to determine the relative amounts of molecular and micellar soap in the intermediate region in which both phases are present. H. B. Klenvens. *J. Chem. Physics* 14, 569-70 (1946).

Lard and Tallow Fractions

Lard and edible tallow were subjected to a series of fractional crystallizations from acetone at temperatures from 20°C. to -45°C. Six recrystallized precipitate fractions and a filtrate residue were obtained from each fat. The fatty-acid composition of each fraction was calculated from spectrophotometric data, iodine value, and thiocyanogen value. The consistent results obtained by the spectrophotometric method of fatty-acid analysis lend further confirmation to the reliability of this method for composition studies of natural fats. Tallow contains much higher proportions of tri-saturated and disaturated glycerides and correspondingly lower proportions of the monosaturated and tri-unsaturated glycerides than does lard. R. W. Riemenschneider, F. E. Luddy, M. L. Swain and W. C. Ault. *Oil & Soap* 23, 276-82 (1946).

Glycerol Determination

Glycerol can be determined spectrophotometrically by formation of a blue sodium cupri-glycerol complex. Existing analytical methods do not approach this one in facility and rapidity, also preliminary purification of most samples is unnecessary. L. K. Whyte, *Oil & Soap* 23, 323-6 (1946).

SANITARY PRODUCTS

A SECTION OF SOAP

CONTRARY to the general insecticide raw material situation, the supply of finished household insecticides, particularly insect residual sprays, in distributing channels is believed to be quite large. With this in mind, we suggest that an effort to do a little educational work among users between now and the actual consuming season may be of two-fold benefit, (1) to help move accumulated stocks, and (2) improve later demand through better performance by correct use. Advertising plans for 1947 now being made by insecticide manufacturers, we feel, should aim to explain the purpose of a surface spray and how it differs from a space spray. We believe that the public ideas on this subject are still very hazy. Such effort and money put into advertising in this direction should benefit not only the individual advertiser, but the entire industry. Another season of the confusion and uncertainties such as 1946, and the public is liable to sour on all insect sprays.



DEVELOPMENT of scientific methods for testing aerosol insecticides has begun. As the use of this newest type of insecticide expands and as new products come on the market, the need for a reliable test method is quite apparent. Leaders in the aerosol field, conscious of this problem for some time past, are now taking steps to develop a suitable test procedure. Their initial efforts in this direction are certainly to be commended as indicating a desire to market and evaluate their products on a sound basis of performance.

In looking back over the preliminary work by Peet and Grady some years ago and the dozen and one obstacles which had to be overcome before the Peet-Grady Test bore a resemblance to

the present internationally accepted method, we feel that an acceptable procedure for testing aerosols will present even a tougher problem to solve. However, a noteworthy start has been made, and although the road may be long and rocky, we are certain, will receive the full co-operation of the entire insecticide industry.



BUSINESS starts 1947 still plagued by shortages of one sort or another. Paper products, tin cans and other metal containers, and a host of chemicals offer the most serious supply problems for manufacturers of insecticides, disinfectants and allied sanitation chemical products, just as they do for other manufacturers. Some hopes have been expressed that by mid-year, the paper and metal container shortages may ease, although there is no assurance of this. As for chemicals, producers of basic materials are decidedly pessimistic regarding supplies.

Derivatives of coal-tar, it is believed will continue to struggle along on reduced production due to the shortages of the basic materials which were further aggravated by the coal strike last November. The belief has been expressed that it will take a full year at least for normal operating stocks and reserves of crude coal-tars to be rebuilt. This means that products such as tar acid oil, cresylic acids, paradichlorbenzene, other chlorinated benzols, DDT, and allied materials are likely to continue to be difficult to buy. All in all, the outlook for our second full calendar year of peace is still far from rosy.

What is most needed, obviously, is a period of full production, free from strikes and slowdowns. It seems a sad commentary that our economy, which was able to produce at such a tremendous rate for war, cannot now do anything like the same job under peace time conditions.



NAIDM...

Candid shots . . .

PHOTOS taken by *Soap & Sanitary Chemicals'* cameraman at the annual meeting of the National Association of Insecticide and Disinfectant Manufacturers held Dec. 2nd, 3d, and 4th, 1946, at the Commodore Hotel, New York.

Figure 1, left to right: Melvin Fuld, Fuld Brothers, Inc., Baltimore; Amos Badertscher, McCormick & Co., Baltimore; Arthur Rasmussen, Furst-McNess Co., Freeport, Ill.; C. L. Weirich, C. B. Dolge Co., Westport, Conn.

Figure 5, left to right: Herbert Kranich, Kranich Soap Co., Brooklyn; Andrew Federline, Potash Soap Association, Brooklyn; Russell Young, Davies-Young Co., Dayton, Ohio.

Figure 2, left to right: J. Zucker, State Chemical Co., Cleveland; Tom Morgan, Soap & Sani. Chems., New York; Harold Green, L. Sonnenborn & Sons, Inc., New York; Harold King, R. J. Prentiss & Co., New York.

Figure 6, at left to right: Russell Stoddard, Dodge & Olcott, Inc., New York; Dave Lynch, John Powell & Co., New York.

Figure 3, left to right: A. W. Morrison, Socony Vacuum Oil Co., New York; J. H. Lawson, Federal Varnish Division, Enterprise Paint Mfg. Co., Chicago.

Figure 7, left to right: J. Zucker, State Chemical Co., Cleveland; Jack Varley, Baird & McGuire, Inc., St. Louis; Dr. L. S. Stuart, U. S. Dept. Agriculture, Washington; Douglas Malcolm, R. T. Vanderbilt Co., New York.

Figure 4, left to right: H. W. Hamilton, Koppers Company, White Tar Division, Kearny, N. J.; John H. Mills, Bridgeport, Brass Co., Bridgeport, Conn.

Figure 8, left to right: Jack Purcell, R. J. Prentiss & Co., New York; Paul Torpin, McLaughlin Gormley King Co., Minneapolis; M. L. Magee, T. F. Washburn Co., Chicago.



BENZENE HEXA-CHLORIDE is one of the newer insecticide compounds at the top of the list for investigation. This compound was first reported on by Faraday in 1825. Those of you who have seen a copy of Dr. R. E. Slade's Hurter Memorial Lecture know that insecticide studies on this material were begun in England in 1942; that it is a complex of isomers (five now being known), that inconsistencies in the biological performance of various samples were noted and that the major insecticidal value of the material is attributable to the gamma isomer.

The compound is reported as being quite stable chemically but breaks down in the presence of alkalies so that in this respect it presents compatibility problems similar to DDT.

The toxicity of the compound to laboratory animals has been studied in England by Dr. Taylor, as have also the isomers themselves, and in these experiments the LD-50 for rats in seven days is 1.25 grams per kilo of the crude material and .19 grams per kilo of the gamma isomer—the gamma isomer being the most toxic of the isomers to warm-blooded animals. Chronic toxicity experiments have shown that rats can be fed 10 to 30 mgs. of the gamma isomer daily for a five-week period without ill effects and 100 mgs. of the mixed isomers per day for a two-month period induced no ill effects. Topically a five per cent emulsion of the mixed isomers applied to the tails and ears of rats twice daily gave no ill effects over a two-week

period. The subcutaneous injection of 100 mgs. of the gamma isomer per kilo of weight induced a 25 per cent mortality of rats. The live individuals were seriously affected but recovered.

In similar experiments, using 600 mgs. of the mixed isomers, ill effects were not induced. It would appear that the crude material involves less hazard from a toxicological standpoint than is the case with DDT.

As an insecticide, benzene hexachloride performs as a stomach poison, a contact insecticide and a fumigant. In England, laboratory and field trials have been carried out against more than three dozen species of insect pests and similar trials made in the United States on an even wider variety of insects lead us to conclude that there are some very definite uses for this compound. In England, substantial quantities of a benzene hexachloride dust have been used commercially for flea beetle control. The initial investigations were essentially a search for a substitute for derris used in the beetle control. Promising results on grasshoppers have resulted in use of substantial tonnages of benzene hexachloride for locust control in the Argentine, North Africa and elsewhere. Results on grasshoppers with benzene hexachloride in the United States have been erratic, and there are indications that other new compounds may be superior.

Dr. Bishop in two recent publications has reviewed much of the preliminary experimental work of the Bureau of Entomology and Plant Quarantine on benzene hexachloride, most of which remains to be published. Further details of tests conducted under the Crop Protection Institute can



DR. ALFRED WEED

be expected shortly. From an agricultural use standpoint, benzene hexachloride appears most promising against cotton insect pests, several species of aphids, and as a soil insecticide it is extremely toxic to larvae of the white fringe beetle, wire worms attacking potatoes and the Japanese Beetle.

It must be remembered that there have been some reports of injury where benzene hexachloride has been applied to young plants and some interference with plant growth has been noted where benzene hexachloride has been applied to the soil. Taste contamination of fruits and some vegetables has also been attributable to applications of benzene hexachloride and all of these points require further investigation.

The crude benzene hexachloride largely studied to date is material reported to contain from 10 to 12 per cent of the gamma isomer. Experimentally at least, material of two and three times this gamma content has been made, as has also the relatively pure gamma isomer itself. The practicability of producing the higher gamma isomer content material does not appear to have been settled and at the present time it is doubtful if there is enough of a place in the insecticide picture to warrant production of the

* Before Natl. Assn. Insecticide & Disinfectant Mfrs., New York, December 2, 1946.

pure gamma isomer. At present, there is no large place for this compound in the household insecticide field, the problem being, of course, elimination of its persistent musty odor and a reduction if possible in its irritating qualities. Improvement has been seen in the crude material, but it has not gone far enough for anyone to recommend any general use of benzene hexachloride in liquid household sprays. In France, proprietary sprays based largely on benzene hexachloride are in use; in fact, they are already on the U. S. market.

An improvement in odor can be made by taking the crude up in deodorized base oil approximately 15 per cent by weight, agitating and filtering, in this manner removing some of the alpha and beta isomers and doubtless some of the included impurities. Several samples of crude of different origin have been so prepared and, while the odor is improved, the degree is still short of what is required for an acceptable space spray. Dilution of a solution prepared as above indicated to five and 10 per cent of its original strength by the addition of deodorized base oil to roughly 60 and 120 mg. of gamma isomer per 100cc, still leaves an odor problem. Sprays made in this manner and applied to relatively impervious surfaces, such as oil painted plaster walls and woodwork, leave an odor which persists for several hours—even overnight and applied to fabric the odor is detectable for weeks. Several of the usual odors used in liquid household sprays provide satisfactory "package coverage" but on spraying the musty odor promptly asserts itself.

As a contact spray, several laboratories have established the fact that the gamma isomer of benzene hexachloride is many times more toxic to adult houseflies than is DDT, roughly 12 mgs. of gamma isomer per 100cc equal to 100 mgs. of DDT per 100cc on the basis of comparisons made in Peet-Grady equipment. A knockdown toxicant is necessary with solutions of the gamma isomer because of its slow action. As a residual deposit, the compound is substantially less persistent than is DDT.

Housefly larvae are quite sus-

ceptible to the gamma isomer, as reported by McGovran and Piquett, when it is added to fly breeding media. Further observations seem indicated to ascertain whether the periodic treatment of manure piles and other fly breeding sources with benzene hexachloride would not supplement farm outbuilding spraying with DDT residual materials.

The gamma isomer is very toxic to roaches when applied as a direct contact spray in conventional insecticide base oil. At a concentration of 500 mgs. of gamma per 100cc, complete kills of the large nymphs of both the American and the Oriental roach are obtained in 48 hours. Paralysis is slow, taking approximately 30 minutes to attain 50 per cent. DDT at 10 times the above concentration gave 65 and 83 per cent control in 48 hours for the two species respectively.

Benzene hexachloride is very toxic to carpet beetle larvae and clothes moths when applied to fabric which is then infested or when applied directly to these insects as a spray. If the problem of odor can be overcome, or in situations where odor is not important, this represents a very interesting application for the compound.

Another problem in which benzene hexachloride shows promise is against some of our cereal product pests. Slade reports the grain weevil very susceptible to dusts containing as little as one part of gamma isomer per million parts of wheat. It was not detectable in the flour subsequently produced, nor in bread made from the flour. Preliminary results look promising on a mill spray mixture of benzene hexachloride and pyrethrins used against *Tribolium* species around flour handling equipment.

It is quite probable that benzene hexachloride will enter into the cattle spray program in the Middle West where DDT has been used so extensively for horn fly control. Ray L. Cuff of the National Livestock Loss Prevention Board, Kansas City, indicates that where a quick clean-up of lice is desired, benzene hexachloride does an excellent job. Unpublished data collected by Dr. H. S. Telford of Dr. Hess & Clark, Ashland, Ohio, in-

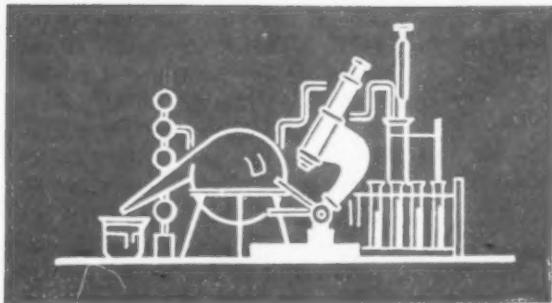
dicates considerable promise for benzene hexachloride on cattle lice and good results were secured with a benzene hexachloride suspension applied to roosts only for poultry lice control. Dr. Telford points out that odor and irritation were quite objectionable with a number of the preparations that he has investigated. It might also be of interest to note that nest eggs made with benzene hexachloride imparted an unfavorable odor to eggs deposited in the nest.

It has recently been reported by J. G. Sanders that the gamma isomer of benzene hexachloride is effective against some common greenhouse pests when volatilized at the rate of one-half gram per 1000 cubic feet of space.

Whereas we are accumulating a substantial amount of informative data on benzene hexachloride or its gamma isomer, much confusion exists. This is quite evident in view of the variety of experimental compositions that have been distributed, which would appear in many instances to have been placed in the hands of investigators without information as to the actual amount of gamma isomer involved. From the household spray angle, we have but a limited number of insects to consider and most of these are available the year around, but this is quite different when we get over into the agricultural field where a season's work is easily lost thru lack of adequately standardized material. Steps are being taken as quickly as possible to correct this problem thru the use of the infra-red spectrophotometer for gamma isomer determination.

On the basis of the samples which we ourselves have so far had an opportunity to work with, the matter of odor alone, with the exception of the relatively pure gamma isomer, puts the material outside the scope of those products which we have learned to consider as being acceptable for liquid household insecticide use. How the British housewife could tolerate a roach powder made from crude benzene hexachloride is beyond me and the same applies to household fly spray compositions such as are sold in

(Turn to Page 155)



Progress Report On A New Insecticide

By L. A. Stearns*

University of Delaware

THE present, noticeable effort on the part of various agencies to devise more efficient chemical controls for annoying and destructive insects did not originate, as is stated so frequently, with the recent wartime emergency. On the contrary, this served only as a further and a sharp incentive for an endeavor which actually commenced, rather inconspicuously, in the early nineteen-twenties.

At that time, under conditions of a more and more intensified agriculture, insect populations and the losses resulting therefrom to many important crops were steadily increasing. For some years, therefore, experimentation was directed toward the production of a more uniform and a more persistent plant coverage through the addition of various materials to sprays prepared with the relatively few insecticides of general application then available. The widespread and continued use of such combinations, with these poisons included at high dosages to combat stubborn infestations, culminated logically in the residue situation of 1933. And then, with the establishment of harvest tolerances for fruits and leafy vegetables, a search for arsenical substitutes was immediately and actively under way.

There soon appeared, in the course of these explorations, certain compounds which gave indications of insecticidal value. Some of them have

Test results with a new chlorinated bicyclic terpene against household insects—compared with DDT and OTI

proved worthy of development. A very few of them are now recognized as effective toxicants, although somewhat specific in their application.

With World War II, this search became a race, with the health and even the lives of those in our Armed Forces at stake. The war is over, but this race is still on. Consequently, industry is confronted today with a considerable number of potential insecticides. Some are correctly but inconveniently referred to by their chemical descriptions; others bear catchy, trademarked names, with or without any apparent relation to the compounds themselves; while still others are designated by numerals alone, which give no indication, whatsoever, of their composition. In most cases, the full possibilities and the probable limitations of these products have not yet been determined. There is an obvious tendency to evaluate each candidate in terms of the demonstrated power of DDT: Is it relatively slow-acting? Does it exhibit a high kill at low concentrations? What is the residual effect? Included in this group, is the chlorinated

bicyclic terpene (3956), the properties and qualifications of which can no more than be suggested by the facts considered herein.

Synthetic 3956 is a result of long-continued research by Hercules Powder Company chemists and University of Delaware entomologists. Although referred to as a polychloro bicyclic terpene, having the approximate empirical formula $C_{10}H_{10}Cl_5$, 3956 is more properly identified as a chlorinated camphene. It is a light yellow, waxy product with a very mild piny odor, containing 67 to 69 per cent chlorine. It melts in the range of 65 to 90° Centigrade, has a density of 1.6, and excellent solubility in common organic solvents. Obviously, the solubility characteristics are advantageous in the formulation of liquid insecticide concentrates.

This is believed to be the sixth, brief report covering the early and favorable performance of this new insecticide: the first, by Stearns et al (1946—April 5); the second, by Deonier et al (1946—May 27); the third, by Bishopp (1946—September 5); the fourth, by Stearns et al (1946—November 22); and the fifth, by Pepper and Wilson (1946—November 22). These previous papers present data on preliminary tests with 3956 as a mosquito larvicide for both culicines and anophelines; they include the results of field experiments for control of certain destructive fruit and vegetable insects; and they provide very limited information on its use in the case of a considerable number of other important animal and crop pests. Evidence.

* Before Natl. Assn. Insecticide & Disinfectant Mfrs., New York, December 2, 1946. Published as Miscellaneous Paper No. 17, with the approval of the Director of the Delaware Agricultural Experiment Station. Publication 207 and Scientific Article 131 of the Department of Entomology, November 27, 1946.

Table 1.—Comparative toxicity; 3956, DDT, and OTI; house fly

Treatments ¹	Average 24-Hour Mortality in Per Cent		
	Deobase Weight-Volume Formulations in Per Cent	0.25	0.1
DDT		100	99
OTI		44	
3956		100	98

¹ 0.5 cc. of spray for each concentration of all samples delivered under 12.5 lbs pressure.

thus far, indicates that 3956 will prove to be a valuable addition to the rapidly growing list of toxicants available for formulating effective household, livestock, and plant sprays.

A summary of representative results with 3956 against several household insects follows:

House fly.—Laboratory-prepared samples of 3956 have been tested against the house fly, *Musca domestica* L., by the Bell-Jar Method. DDT (aerosol grade with setting point of 104° Centigrade) and the Official Test Insecticide (OTI) were included for purposes of comparison. The results, set forth in Table 1, indicate that 3956 and DDT are equally and highly toxic to this insect.

Two series of tests with the house fly have been completed by the same method, which establish further the similarity of performance for these toxicants. In the first study (data summarized in Table 2), the concentration of each sample was held constant (a 0.1 per cent "Deobase" weight-volume concentration) and the volume of spray, delivered into the test chamber under 12.5 pounds pressure, was varied from 0.05 cc. to 0.45 cc. by 0.05 cc. gradients. In the second study (data summarized in Table 3), the volume of spray was held constant (0.5 cc.) and the concentration of the toxicant was varied from 0.005 per cent to 0.10 per cent.

The conclusion drawn from the tests reported in Table 1 is well-supported by the data in Tables 2 and 3. An OTI-mortality difference of +50 (+ or -5) was obtained with a 0.1 per cent "Deobase" weight-volume formulation of both 3956 and DDT, when the volume of spray used was 0.5 cc. DDT proved slightly or consid-

erably superior to 3956, however, at all concentrations less than 0.1 per cent and at all volumes less than 0.30 cc.

As a residual toxicant, 3956 compares very favorably with DDT. This statement is based upon the results of 12 tests completed at monthly intervals following treatment. Cubical cages (16.25 inches, each dimension), the insides of which were sprayed on July 3, 1945, were used in this experiment. The tops and bottoms of these cages were solid glass, and the four sides were fitted with five glass panels, each approximately three inches in width.

A one-sixteenth-inch space between the panels permitted air circulation and minimized any possibility of fumigation. Over a 12-month period, deposits of 82 milligrams per square foot effected complete kills of the house fly in between six and seven hours for both 3956 (6.9 hours) and DDT (6.1 hours). The minimum hours for complete kill in the case of 3956 were 2.7 and, in the case of DDT, 4.3; both recorded at the first test. The time required for complete knockdown averaged (for the year) slightly less than one-half hour for DDT and slightly less than three hours for 3956. No knockdown and no kill were recorded for the acetone check.

German cockroach.—Synthetic 3956 and DDT have been compared from the standpoint of toxicity to the adult male of the German cockroach, *Blattella germanica* (L.). Some of the tests were conducted by the Direct-Spray Method, in each instance using 0.5 cc. of spray delivered under five pounds pressure. The data presented in Table 4 show that 3956 was superior

Table 2.—Comparative dosage-mortality data; 3956, DDT, and OTI; house fly

Treatments ¹	Average 24-Hour Mortality in Per Cent									
	Volume of Spray Delivered into Test Chamber in Cubic Centimeters									
	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50
DDT	60	75	94	96	97	99	98	99	99	99
OTI										41
3956	18	42	60	79	81	95	97	97	99	

¹ 0.1 per cent Deobase weight-volume formulation of each sample for all tests.

Table 3.—Comparative concentration-mortality data; 3956, DDT, and OTI; house fly

Treatments ¹	Average 24-Hour Mortality in Per Cent					
	Deobase Weight-Volume Formulations in Per Cent	0.005	0.012	0.025	0.05	0.10
DDT		32	59	69	92	95
OTI				40		
3956		5	12	41	56	92

¹ 0.5 cc. of spray for each concentration of all samples delivered under 12.5 lbs pressure.

to DDT at all concentrations except five per cent. At that rate, both toxicants produced a complete kill. Results against fourth-instar nymphs of this species were decidedly less satisfactory, although still in favor of 3956. Mortality with 3956 was 25 per cent and with DDT, 10 per cent. Both were used at a 2.0 per cent concentration. The OTI mortality averaged 20 per cent.

Dust formulations of 3956 (10 per cent), also, have proved effective for the adult male of the German cockroach. When one-half-gram quantities of the impregnated dusts listed in Table 5 were dispersed in a dust tower and allowed to settle on the test insects, complete kills were obtained within 18 hours; only five per cent were dead in the case of the diluent.

Adult male German cockroaches have been allowed to feed upon dog food (small-sized Purina pellets) treated with 3956. Approximately 75 per cent were killed within 48 hours. Nymphs of the American cockroach, *Periplaneta*

Table 6.—Mortality and injury data; 3956; fabric pests

Treatments	Insect	Injury	Survival in Per Cent	Siftings or Frass in Milligrams
0.8% 3956 by weight of cloth		None	25	1
1.25% 3956 by weight of cloth	Black carpet beetle	None	30	1
Untreated check		Severe	100	37
0.8% 3956 by weight of cloth		None	5	0.5
1.25% 3956 by weight of cloth	Furniture carpet beetle	None	5	0
Untreated check		Severe	80	18
0.8% 3956 by weight of cloth		None	5	0
1.25% 3956 by weight of cloth	Webbing clothes moth	None	5	0
Untreated check		Severe	60	15

americana (L.), were not thus affected, probably due to meager feeding.

When adult male German cockroaches and American cockroach nymphs were forced to walk through a four-inch width of a 10 per cent 3956 dust, all were moribund and a slight kill was recorded within 24 hours.

Fabric pests.—The black carpet beetle, *Attagenus piceus* (Oliv.), the furniture carpet beetle, *Anthrenus vorax* (Waterh.), and the webbing

¹ Hercules Powder Company data; tests by Warren Moore, Bon Air, Va.

clothes moth, *Tineola bisselliella* (Hum.), were controlled very satisfactorily by 3956. When cloth was treated with this toxicant, as indicated in Table 6, the percentage of survival for all three insects was low and no injury occurred. With untreated cloth, survival was high and injury severe. However, dry-cleaning fluids rendered 3956 partially to wholly ineffective by simple solvent extraction. See Table 7.

*Bed bug*².—The toxicity of 3956 to the adult bed bug, *Cimex lectularius* L., has been established by the Direct-Spray Method. The results summarized in Table 8 show that "Deobase" formulations of 3956 are effective against this pest; a mortality of 94 per cent in 48 hours was obtained through the use of 0.25 cc. of 5.7 per cent (by weight) 3956 in "Deobase."

As a residual poison for this insect, 3956 is at least as effective as aerosol grade DDT. Acetone solutions of both were applied to small glass Petri dishes at the rate 100 mg. of toxicant per square foot. After evaporation of the acetone, the bed bugs were placed on the treated surface, where they remained during the entire test period. The resulting data (see Table 9) indicate that, while the initial action of 3956 is somewhat less than that of DDT, it equals or surpasses DDT in the final kill produced.

Knockdown with 3956.—Although highly toxic and displaying a marked residual effect, 3956, in common with DDT, is relatively slow-acting. In other words, 3956 by itself

² Hercules Powder Company data; tests by Dr. F. O. Hazard, Wilmington, O.

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Table 4.—Comparative concentration-mortality data; 3956, DDT, and OTI; German cockroach

Treatments ¹	Average 24-Hour Mortality in Per Cent			
	Deobase Weight-Volume Formulations in Per Cent			
	1.0	2.0	2.5	5.0
DDT	49	72	95	100
OTI		46
Absolute check	0	0	2	0
3956	73	95	100	100

¹ 0.5 cc. of spray for each concentration of all samples delivered under 5 lbs. pressure.

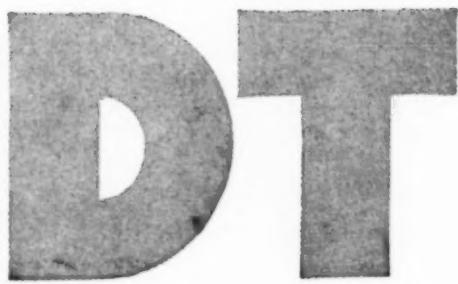
Table 5.—Mortality data; 3956 dust formulations; German cockroach

Treatments ¹	Per Cent	
	Moribund in 3 Hours	Dead in 18 Hours
10% 3956: mixture of 50% 3956 and 50% Attaclay diluted with pyrophyllite (Pyrax ABB)	25	100
10% 3956: mixture of 50% 3956 and 50% Cherokee clay diluted with pyrophyllite (Pyrax ABB)	14	100
Pyrax ABB check	0	5

¹ 0.5 gr. quantities of all samples.



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Sanitation in Food Establishments

Problems faced by the public health official with a few suggestions as to how they may best be solved

By A. G. Macnab,*

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THE public health official has to face a wide variety of problems in his job of protecting the public health; the solution of these problems requiring a wide range of experience and ability. He must be well versed in bacteriology of water, milk, and foods, epidemiology, parasitology, analyses of water and milk, co-efficiency of disinfectants, liquid soaps, sterilizing agents, dishwashing compounds, artificial and natural lighting, overcrowding in boarding and rooming houses and all public places, slum clearance areas and fumigation, and last, but not least, he must be conversant with the Federal, Provincial and Municipal laws and by-laws.

The control of places dispensing food and drink for human consumption is one of the most difficult and important problems in the field of public health. Food handlers play a major role in maintaining the health of the community and the duty of the Public Health Service, aside from regular routine inspections, must also be supplemented by educating the proprietors of food establishments and their employees by conferences and demonstrations. It is sometimes difficult for the restaurant manager to grasp the significance of many of the conditions which may cause contamination, and for this very reason demonstrations are often necessary. The

elementary principles of bacteriology, fermentation and putrefaction can be demonstrated in a simple, understandable form. Suitable cultures growing on a media and labelled to indicate the various forms of bacterial life and the various foods on which these bacteria may be found should be prepared and displayed.

The term "dirty plate," "dirty spoon," or "dirty fork" should be enlarged on. When the public health official mentions such terms he really means that the washing has not been thorough, that sterilization could not be completed because the grease or food particles have not been removed after use, therefore the invisible "dirt" or bacterial life will still be present and this invisible element is a factor of which we must educate food establishment operators to become conscious. The habits of germs must first of all be reviewed, and a study made of the best methods to adopt for the protection of various foods against contamination and against recontamination directly or indirectly.

First, how do foodstuffs become contaminated? The germs of many communicable diseases may be present in the mouth, throat, gastrointestinal and genito-urinary tracts and leave the body with the excretions from these parts. In this manner, the various diseases may be spread by a person having a specific disease or by a carrier of a disease. It is a known fact that the following diseases can be spread by food which has been contaminated: diphtheria, dysentery bacillary, paratyphoid and typhoid fever, scarlet fever, streptococcus sore throat, and tuberculosis. There are other diseases

which can be spread by improperly washed dishes which have been re-contaminated by the food handler, such as, to mention, a few, chicken pox, influenza, measles, pneumonia, common cold and whooping cough. These diseases are readily transmitted from person to person, either directly or indirectly.

The first fundamental principle of food personnel should be personal cleanliness. In spite of all the preventive measures enforced by health authorities, it is realized that careless contact of food handlers with diseased persons or with contaminated objects such as used dishes, silverware, and utensils and many other inanimate objects is responsible for a large but undetermined number of isolated cases of communicable disease caused by food contaminated by a specific germ.

One of the most elementary but most difficult rules to enforce systematically in food establishments is the washing and proper disinfection of hands, nails and arms. Since a large number of food handlers, particularly the type which is employed at low wages in second class food establishments are not naturally inclined to hygiene, foods from such establishments are potential germ carriers. There is an unfilled need for mechanical, automatic hand and arm sterilizers and driers in food establishments, as well as hand washing basins having liquid soap dispensers and paper towels in the washrooms of such establishments.

Sanitary control of all places open to the public varies greatly with the type of establishment and rules

* Before Natl. Assn. Insecticide & Disinfectant Mfrs., New York, Dec. 4th, 1946.

governing the respective places. The most important of these naturally are the establishments in which foodstuffs are prepared, manufactured or stored for human consumption. In the control of such establishments, the manufacturers of soaps, disinfectants, sterilizing agents and insecticides play a tremendous part. It is necessary, therefore, that the companies offering dishwashing compounds or cleansers for sale have more to sell than material—service is of primary importance. A good salesman for such a company should and usually does know more about the operation of dishwashing machines than those who own them. He knows more about the quantity of detergent which should be used and how often additional compound should be added to maintain the proper alkaline level.

To design a detergent that fits into this scheme of mechanical dishwashing is not just mixing so much of A and so much of B. First, it requires a thorough knowledge and understanding of the machinery, sanitary regulations, operation and personnel involved, along with a vast amount of first hand practical experience; second, it requires a thorough knowledge of cleansing materials, their application, and laws governing their use; third, it requires almost innumerable laboratory tests on corrosion, scale formation, water softening, soil removal, and sterilization; fourth, it requires practical field testing to make certain that the findings of the laboratory can be applied on a commercial scale. One thing is certain, it does not pay to buy material except from companies able to give excellent service and companies whose product is uniform. Manufacturers of dishwashing machines and manufacturers of dishwashing compounds and sterilizing agents must co-ordinate their ideas to give the purchaser of dishwashing machines ideal service.

Cleanliness and sterilization of dishes and utensils depend for complete efficiency upon three principal operations. These are first, the scraping of used dishes before washing, which is a very important step; next, washing, which involves properly stacking dishes in metal racks having spaces

between the dishes, and subjecting them to water which has a temperature of 135°F. plus a dishwashing compound. This compound must be added from time to time, either manually or automatically to maintain an alkaline level. This is essential if dishes and utensils are to be properly washed. The third important step consists of sterilizing dishes and utensils. This is accomplished by subjecting them to water having a temperature of 180°F. for at least two to three minutes.

REPORTS of recent work and experience with alkyl-diamethyl-benzyl-ammonium chlorides indicate that this compound may have much to recommend it as a chemical bactericidal agent for use in a manner similar to chlorine. It is said to be much easier to maintain the strength of this substance in the rinse water, and it does not have any objectionable taste or odor in the concentrations used. This will render dishes which have been satisfactorily cleaned free from any bacteria which might cause a communicable disease. After the final rinse, these dishes have to be stored in a suitable glassed-in cupboard to prevent dust from the atmosphere re-contaminating the surface.

The time has arrived when a restaurateur employing dishwashing operators should choose a better type of person for this important job. The dishwasher must be a person who can think for himself and not be just an automaton. The task he performs must be given careful attention, taking into consideration the possibility of re-contamination of food either from his habits or utensils. Much time and money has been spent on the inspection, preparation and storing of food for human consumption and all this will be lost if the method of washing and sterilizing utensils causes re-contamination of this food. It has been clearly demonstrated on many occasions that improperly washed dishes and utensils have on their surfaces many bacteria which may cause disease. Education along these lines is certainly a matter of first importance.

Demonstrations are particularly illustrative in the education

of food handlers. By means of local advertisements and radio announcements, in co-operation with the Health Department, meetings may be arranged and simple explanations and demonstrations given. For example, petri dishes containing nutrient agar may be passed around for examination, with the explanation that this jelly or agar is what the germ would live on. By a simple action such as touching, coughing, breathing, sneezing, talking or laughing, germs may then be transferred from the nose, mouth or hand to this media and after incubation, the growth of the various types of germs present in the nose, mouth, or hand, could be exhibited. Such a demonstration would no doubt create a germ conscious attitude among those in attendance. Bacteriological samples may be taken, first from a bottle of milk which has been kept at room temperature for two hours, and then from a bottle of the same supply which has been kept cold. This is done in front of the group and the results would make them realize the necessity for keeping milk in the refrigerator at all times. Another experiment could be to plate a hair from the head; this has been done on several occasions by the writer, with impressive results.

Examples might be given of outbreaks of food poisoning in various municipalities, explaining the cause, and demonstrations would sometimes be possible. Exceptional care must, of course, be taken in manufacturing, preparing, storing, and dispensing such foods. In preparing foods which require heating, sufficient heat should be maintained to kill off any pathogenic bacteria which may be present. Foods not intended for immediate consumption should be kept cold in the refrigerator as many outbreaks of food poisoning result from lack of proper refrigeration, particularly cream-filled pastry, meats, and other foods.

Refrigerators prolong the time during which all perishable foods may safely be kept, afford protection against contamination by dust, and should provide uniform temperature low enough to prevent multiplication of bacteria while the food is actually

in the refrigerator. Nevertheless, refrigerators have their limitations and these are not always appreciated by food handlers, lacking knowledge of bacterial activity. Cold storage cannot render a food safe once it has been infected by harmful bacteria. It must always be remembered that refrigerators are not sterilizers and any bacteria that may have infected the food when out of the refrigerator will only be rendered inactive when returned to the refrigerator, not killed. The film of moisture caused by the "thawing out" of frosted food actually provides a more suitable medium for bacterial activity than a dry surface. It is therefore apparent that actual danger may be caused by expecting too much from a refrigerator and thereby bring a useful modern appliance to disrepute.

Quiz cards may be distributed and answers provided for the questions after the general principles are demonstrated. A general discussion should follow, and a movie relating to the subject may then be shown. Interest and results should reveal a raising of the general standard of cleanliness and sanitation.

THE question of food handlers being given periodic medical examinations is of great importance, but in a large city the cost involved is prohibitive, when this is done, for example, as often as every three months. The type of examination necessary would be an x-ray of the chest, Wassermann Test, examination of the feces and urine for the detection of typhoid, paratyphoid, or dysentery group carriers. If this examination were undertaken by municipalities, however, we would then have gone a long way to make our food handlers health conscious.

Operators should all be instructed in the principles involved in personal cleanliness and the best methods of preparing, storing, and dispensing of foods. In this health conscious era the public is being schooled along lines appropriate to the subject matter. Similarly they are demanding modern and approved methods of food sanitation.

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Pyrethrum Refunds Negotiated

AMERICAN importers of pyrethrum have been negotiating with the Kenya Farmers Association for the past several months in an attempt to straighten out a complicated testing and pricing controversy covering some of the 1946 shipments of Kenya pyrethrum to the United States. Involved is a sum estimated at something in the neighborhood of several hundred thousand dollars, which American importers feel is due them because of failure of a substantial percentage of 1946 arrivals of pyrethrum flowers to test up to the standard of 1.3 per cent pyrethrins content. A mission sent to the U. S. by the Kenya Farmers Association last September was understood to have proposed a compromise settlement, which was rejected by the importers. More recently other agencies involved have reopened the subject in an attempt to reach a satisfactory settlement. It is reported now that some adjustments have already been made and others will be settled very shortly.

The following background on the controversy has been given to *Soap and Sanitary Chemicals* by the various pyrethrum importers, as well as by the American representatives of the Kenya Farmers Association. During the war KFA sold its pyrethrum crop to the British Ministry of Supply which in turn sold the flowers to the U. S. Commercial Co. Sales by the KFA to the British Ministry of Supply were on the basis of visual grading which does not involve chemical analysis of the flowers. Under this set-up Kenya growers received a guaranteed price, regardless of how the flowers tested as to pyrethrin content. On sales by the U. S. Commercial Co. to American importers, however, flowers were guaranteed to test 1.3 per cent, with allowances being provided for shipments testing either above or below this figure.

When the war ended and the KFA, in October, 1945, resumed direct sales to American importers as agents for the British Board of Trade, the

contracts with American buyers specified a 1.3 per cent pyrethrin content. The Kenya farmers, incidentally, have established their reputation as pyrethrum growers, ever since the crop was introduced there approximately ten years ago, by supplying high test flowers, and have always made quite a point of the fact that Kenya flowers test high in pyrethrins, and uniformly high, contrasted with flowers from Japan, which when this country supplied the American market were notoriously non-uniform in quality and low in pyrethrin content.

When Kenya arrivals began to come into the U. S. early in 1946, however, and tests were made by the two laboratories, one representing the KFA and the other representing the importers, it was reported that some of the shipments were rather badly deficient in pyrethrin content. American importers had already paid for their flowers in advance on the basis of 1.3 per cent pyrethrins. According to their understanding of the contract, it was an obligation of the American agents of the Kenya Farmers to render final invoicing based on the assays made in the United States and to make refunds for the deficiencies. It is these refunds that have been in dispute.

When the Kenya mission came to the United States last September, they advised the American importers that they must look to the British Ministry of Supply for their refunds. This came as quite a shock to the importers, as they were not aware that the BMS figured in any way in the contract, which they thought of as a specific purchase and sale agreement between the KFA and the various American importers. Apparently now, however, direct negotiations have been resumed and the prospect of early agreement is said to be bright.

The KFA charges that one reason for the possible disagreement between spot tests made in Kenya before the flowers were shipped, and the results of the testing laboratories in New

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Disinfectants and Antiseptics

THE following review of selected papers published during 1946 indicates the continuing trend of interest in antibiotics. Although the mechanism of antibacterial action of the individual known members of this group still awaits clarification, it appears reasonably certain that it does not correspond to any of the mechanisms postulated for the antibacterial effect of any of the antiseptic or germicidal agents known prior to the advent of the antibiotics.

Some notable advances have been reported for other antibacterial agents, but the greatest concentration of effort is evident in the realm of antibiotics.

Phenolic Antiseptics

R. C. JORDAN and S. E. Jacobs (1) (2) carried out an extensive investigation of the dynamics of the germicidal action of phenol, using *Escherichia coli* as test organism. Although it had been known in a number of instances that by means of a suitable modification of the testing procedure an apparent bactericidal effect can be reversed, L. H. Flett, R. C. Haring, A. F. Guiteras and R. L. Shapiro (3) showed that certain phenol dilutions hitherto considered lethal for *Staph. aureus* and *Eb. typhosa* are, in fact, not lethal since their effect can be suspended by treating the affected culture either with activated charcoal or with ferric chloride. Thus the phenol dilution of 1:65 which is considered germicidal for *Staph. aureus* in 10 but not in five minutes under the conditions of the F.D.A. technic is not truly germicidal; depending upon whether activated charcoal or ferric chloride are used, the minimum germicidal concentration shifts to 1:55 or 1:50, respectively. In the case of *Eb. typhosa* the cor-

responding change is effected from the dilution of 1:80 to one of 1:65 with ferric chloride acting as the "detoxifying" agent.

A. H. Fogg and R. M. Lodge (4) regard the distribution ratio between the bacterial and liquid culture phases as the determining factor in the antibacterial action of such substances as phenol, resorcinol, metacresol, metanitrophenol, metachlorophenol and metahydroxybenzoic acid. Using the distribution of these phenolic chemicals between olive oil and an aqueous buffer as a model of distribution between the bacteria and the culture medium, these authors express the view that the chemical structure is significant only insofar as it affects the distribution coefficient between the phases under discussion.

Comparatively little work appears to have been carried out on the synthesis or bacteriological evaluation of new phenol derivatives. G. F. D'Alelio (5) received a U. S. patent for a group of alpha-phenylalkylphenol derivatives obtained by condensation of phenols (monohydric, polyhydric, also alkyl-, aryl- or aralkyl- mono- or polyhydric phenols) with styrene. Examples are 2,4-bis (1-phenylethyl) phenol or 2,4,6-tris (1-phenylethyl) phenol, etc.; antiseptic efficiency is claimed for this series of phenol derivatives.

The inhibitory action upon the

human *M. tuberculosis* (H37) of long-chain 4-n-alkylresorcinol derivatives is the subject of a paper by W. F. Drea (6).

A patent covering certain branched chain alkyl phenols was granted to R. R. Read (7).

In the case of derivatives of 2-aminophenol, nuclear substitution does not increase, but may even decrease antibacterial activity, according to M. Barber and G. A. D. Haslewood (8).

Substituted benzils were tested by Bun-Hoi (9) who found that 2,2'-dihydroxy-5,5'-dichlorobenzil (dichlorosalicil) is more bacteriostatic for *Staph. aureus* than the corresponding dibromosalicil. He examined also 2,2'-diethoxybenzil, 2,2'-dibutoxybenzil as well as the halogenated 2,2'-diethoxy-5,5'-dibromobenzil but found them all to be possessed of only weak antibacterial power.

Although the "white fluid" type of coal tar disinfectant is but little known in the United States, England produces considerable quantities of it. A British patent (10) covers the stabilization of this type of product by means of aliphatic and hydroxylaliphatic compounds such as mono- and polyhydric alcohols.

It is of methodological interest that in the case of a change of the resistance to phenol of *Staph. aureus* (209), incubation at 40°C. helps to restore and to maintain the standard

a summary of scientific
sources reported in 1946

By Dr. E. G. Mazzola*

* Presented on behalf of the Disinfectant Scientific Committee of the National Association of Insecticide and Disinfectant Manufacturers, Inc.



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phenol resistance demanded by the F.D.A. method, as shown by T. C. Grubb and M. A. Edwards (11).

Quaternary Ammonium

HERE has been considerable activity in this class of antibacterial agents. Numerous new quaternary ammonium derivatives have been synthesized, and much work has been done on methods of their bacteriological evaluation.

In order to ascertain the effect of different substituents, E. I. Valko and A. S. Du Bois (12) subjected several homologous series of quaternary ammonium compounds to bacteriological examination. In the series of the alkyldimethylbenzylammonium chlorides in which the alkyl radical is of variable length they found the n-tetradecyl derivative the most effective against both *Staph. aureus* and *Eb. typhosa*; however, the unsaturated n-9-octadecenyl compound was even more effective against the latter although less so against the former test-organism. Other homologous series tested were those of the alkyldimethylethyl-, alkyldimethylallyl- and alkyltrimethylammonium bromides.

The paper by A. S. Du Bois and D. Dibblee (13) deals with a halogenated quaternary ammonium compound "Tetrosan" (alkyldimethyl-3,4-dichlorobenzylammonium chloride) and its effects upon the spores of *B. mettens*.

An exhaustive study of the antibacterial properties of cetylpyridinium chloride has been carried out by R. Quisno and M. J. Foter (14) with the aid of a number of test organisms. Considerable reduction of germicidal action was noted in the presence of 10 per cent of serum under the conditions of the F.D.A. testing method. B. A. Kenner, R. A. Quisno and M. J. Foter (15) studied the same compound also *in vivo* using *Salmonella typhi murium* as test bacteria. In this case the "subculturing" was done by intraperitoneal injection in mice; bacteriological examination of the heart blood and of the peritoneal fluid indicated the effect of the particular concentration of the germicide, depending upon whether viable microbes were recovered from the experi-

mental animal. The average minimum germicidal concentration of 1:45,000 observed *in vivo*, compares with that of 1:58,000 *in vitro*. The application of cetyl pyridinium chloride as a cutaneous germicide in surgery forms the subject of a paper by H. Hagan, C. H. Maguire and W. H. Miller (16). R. S. Shelton and collaborators (17) reported the preparation and investigation of quaternary ammonium salts derived from aliphatic amines, their acetoxy- and carbethoxy derivatives and of quaternary ammonium compounds derived from cyclic amines.

According to R. A. Quisno, I. W. Gibby and M. J. Foter (18) agar interferes with the antibacterial action upon *Staph. aureus* of quaternary ammonium compounds, owing to adsorption; because of this the agar-cup technic of the F.D.A. method is considered to be inappropriate for the bacteriological evaluation of antisepsics containing quaternary ammonium compounds. L. F. Tice and R. Pressman (19) find an incompatibility between cationic antiseptics and the anionic variety of gelatin because of the formation of coacervates; no such phenomenon is observed with the positive type of gelatine.

An interesting theory of the mechanism of the antibacterial effect of quaternary ammonium compounds has been supplied by R. D. Hotchkiss (20). Whenever the concentration of the surface active agent is adequate for bactericidal action, there occurs at first a leakage of nitrogen and phosphorus compounds out of the cells. No such cytolytic injury is produced by certain other antibacterial agents, e.g., hydrogen peroxide, potassium permanganate, formaldehyde and active chlorine compounds. Hotchkiss visualizes the effect of surface active materials as occurring in the following stages: The first stage is a combination of the surface active ions with some oppositely charged sites on the bacterial surface; this process is preventable or reversible by competition of other suitably constituted ions. If the surface active agent exhibits the proper affinity for the bacterial surface, the adsorption will lead to an irreversible damage to the cellular membrane causing a release of the total content

of the soluble nitrogen and phosphorus bearing cell constituents; at this, the second stage, the bacterial cells may still appear to be unchanged morphologically. After this cytolytic injury, the cells are no longer capable of repair; the third stage, that of autolysis follows. It is stressed that the cytolytic type of injury is not a noticeably important feature of germicidal action produced by other types of antibacterial agents.

Reference is made in this connection also to the review by E. I. Valko on the role of surface active agents in biology and medicine (21).

E. G. Klarmann and E. S. Wright (22) (23) raised the question as to whether or not quaternary ammonium disinfectants actually possess the great germicidal power claimed for them. Starting with the premise that the F.D.A. method has been used in testing these disinfectants, the authors proved by means of certain logical modifications of the F.D.A. technic, that the quaternary ammonium compounds are considerably less effective than would appear on the basis of the regular F.D.A. testing procedure. From this the conclusion is drawn that the regular F.D.A. method should not be used with this class of compounds. By way of a working hypothesis it is assumed that a condition is created in the "medication" mixture of a disinfectant and bacteria which prevents the transfer of a representative bacterial sample from this mixture into the subculture tube. The use of either of two modifications of the F.D.A. method allows a more adequate determination of the germicidal potency of this class of compounds. It is brought out also that quaternary ammonium compounds show considerable bacteriostatic action; the use of serum was found to be an effective eliminator of bacteriostasis.

Anionics

WHILE the compounds of this class are not as effective antibacterial agents as the active cationic quaternary ammonium compounds (or generally the long-chain alkylammonium salts) they display a capacity of reducing bacterial counts, including that of the comparatively resistant *Staph. aureus*, as reported by L. H. Flett (24)



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Anionic surface active compounds are capable also of enhancement of the antibacterial efficacy of other antisepsics and disinfectants. Thus, according to W. C. Tobie and M. L. Orr (25), Aerosol OT (bis-2-ethylhexyl sodium sulfosuccinate) increases the phenol coefficients of the following substances: phenol from 1.0 to 1.8, cresol U.S.P. from 2.4 to 4.4, tincture of iodine U.S.P. irregularly from 3.7-4.3 to 4.3-5.5. The apparent phenol coefficient of phenylmercuric nitrate, not corrected for bacteriostasis, is raised from 166 to 1300. It is assumed that the latter appreciable potentiation is due to the formation of a new compound, viz., phenylmercuric bis-2-ethylhexyl sulfosuccinate; however, attempts to isolate such a compound failed, probably owing to its decomposition on drying.

Halogen Compounds

THE action upon influenza virus of the three halogens, chlorine, bromine and iodine, was studied by J. D. Stone and F. M. Burnett (26) who found them about equally effective in equimolecular concentrations, as determined by hemagglutinating power and chick embryo infectivity. Iodine vapors in a concentration of 0.1 parts per million destroy the infectivity of a mist of the virus; however, if this virus mist is allowed to become dehydrated in an atmosphere of a relative humidity below 10 per cent, it becomes more resistant to inactivation by this means.

The preparation of a series of alkylsulfondichloramides was reported by N. N. Melnikov, N. D. Sukharova

and F. Y. Kavenoki (27). They were produced by the chlorination of the corresponding sulfonamides, and all were found to be more active against *Staph. aureus* than chloramine. The maximum efficacy among the straight chain compounds was displayed by the propyl derivative.

Chlorinated hydantoins form the subject matter of three U. S. patents granted to A. O. Rogers (28).

Mercury Compounds

B. HEINEMAN and E. W. Blanchard (29) claim considerable antibacterial potency for a new organic mercurial "Merbak" which is 2-a cetoxymercuri-4-(1,1,3,3-tetramethylbutyl) phenol. In addition to its efficacy with respect to *Staph. aureus*, *Eb. typhosa*, *Esch. coli* and *Ps. aeruginosa* this product is also possessed of fungicidal and fungistatic action. Its toxicity is low.

A U. S. patent was issued to E. A. Peterson (30) for mercurated derivatives of 5-nitroguaiacol. The product diacetoxymercurinitroguaiacol is said to display great bacterial power combined with low toxicity.

A discussion of the several mercurial antisepsics admitted to the National Formulary VIII has been contributed by M. E. Martin (31) (32).

Therapeutic Dyes

IT is of theoretical interest that the quinoid structure of the dye salts is essential for their bacteriostatic activity according to E. Fischer, C. Garces and A. Lopez (33).

Azo-dyes derived from 2-methyl-1-naphthylamine and from 2-methyl-1-naphthol were found to be inhibitory *in vitro* for *M. tuberculosis*, by H. Willstaedt (34). By contrast, azo-dyes

derived from the non-methylated 1- or 2-naphthylamine were devoid of such an efficacy. 2-Methylnaphthoquinone is also bacteriostatic for *M. tuberculosis*. *In vitro* action against this microorganism as well as against other acid fast bacteria (*M. phlei*, *M. smegmatis*, *M. Leprae*) is shown by a number of acridine derivatives, according to the work of R. C. Avery and C. B. Ward (35).

M. Aitoff (36) reports upon the antibacterial performance of bis-dimethyl diamino-3,6-thioxanthonium which is more effective *in vivo* than *in vitro* when compared with gentian violet and malachite green. Also it is more active against Gram positive than against Gram-negative microorganisms, and its toxicity for mice is low.

A U. S. patent for phenanthidine derivatives with bactericidal and trypanocidal action was secured by L. P. Wells (37).

Antibiotics

A S pointed out in the introduction, this large and growing class of antibacterial agents continues to receive considerable attention among bacteriologists as well as chemists. Perhaps the most important news is the recently reported synthesis of penicillin by V. du Vignaud, F. H. Carpenter, R. W. Holley A. H. Livermore and J. R. Rachele (38). While the manner in which the structural components of the penicillin molecule combine still remains unsolved, the available information concerning penicillin's formula, no doubt, will stimulate research on structurally related materials which, in turn, may lead to the discovery of new antibiotics of different specificities and potencies. The impending publication of a monograph on penicillin covering the chemical work done to date, is being awaited with considerable interest by those active in this field.

In the meantime, there is no doubt that penicillin, as well as the other important antibiotics will continue to be derived from natural sources, for some time to come. This is why attention is merited by those experimenters whose work aims at an improved production and an increased yield of antibiotic materials.

the recent synthesis of penicillin will stimulate research on related materials—and may very well lead to the discovery of new antibiotics



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The development of improved penicillin producing molds is the subject of a paper by K. A. Raper (39).

An exhaustive study of a number of factors affecting the yield of penicillin was carried out by F. C. Whitmore and a large group of collaborators (40). J. L. Stokes (41) received a U. S. patent covering a commercial process of production of tyrothricin from *B. crevis* growing in submerged culture.

As to the action of penicillin, R. F. Parker and H. C. Marsh (42) carried out an inquiry into its mechanism with respect to staphylococci. H. Eagle (43) determined the relative activity of the several types of penicillin against different microorganisms *in vitro*, and observed the following sequences of increasing potency: against staphylococci X < F < G < K; against streptococci F < G < K < X; against spirochete X = F < K < G.

Considerable work appears to have been devoted to the study of different varieties of penicillia. From *Penicillium gladioli* P. W. Brian, P. J. Curtis, J. T. Grove, H. G. Hemming and J. C. McGowan (44) isolated gladiolic acid, a strongly fungistatic but weakly bacteriostatic antibiotic. *Penicillium brevi-compactum* contains mycophenolic acid, a new substance inhibitory for *Staph. aureus*, according to E. P. Abraham (45). Another new antibiotic, viz., penicidin was isolated from a group of penicillia growing in Australia, by N. Atkinson, R. A. W. Sheppard, N. F. Stanley and P. Melvin (46). Expansin obtained from *Penicillium expansum* is thought to be identical with patulin, clavacin and claviformin, and to answer the description of the anhydro-beta-hydroxymethylene-tetrahydro-1,4-pyrone-2-carboxylic acid, according to W. Th. Nauta, H. K. Oosterhuis, A. C. Linden, P. Van Duyn and J. W. Dienske (47). The metabolism of penicillin producing molds is the subject of a paper by M. J. Johnson (48).

(To be Concluded)

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Quaternary Testing

An effort to further speed up the development of a satisfactory method for testing quaternary ammonium germicides was recently reported by James Varley, Baird & McGuire, Inc., St. Louis, and chairman of the Disinfectant Scientific Committee of National Association of Insecticide and Disinfectant Manufacturers. A short term project has now been decided upon which will supplement but not replace the studies now underway. The new tests are designed to determine the consistency of an empirically modified phenol coefficient test procedure using one or two selected quaternary ammonium compounds, and will be limited in volume, however, so as to make it possible for more small laboratories to participate actively.

Arrangements were made for this short-term program at the recent 33d annual meeting of the NAIDM, with representatives of the Insecticide Division, Livestock Branch, USDA. At this meeting it was agreed that the studies already assigned would be continued on a long-term basis. Some of the cooperating laboratories reported that they had found the assignments already made to be too heavy for their available facilities.

The details of the new short-term project tests are to be worked out and agreed upon by both the Disinfectant Scientific Committee of NAIDM and representatives of the Insecticide Division of the USDA prior to the sending out of assignments to the member laboratories.

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A method for determining the portion of pyrethrum extracts insoluble in Freon-12 or other liquefied gases is described herein. It has been in use in the laboratory at Beltsville, Md., for more than two years. A method somewhat like it has been published by Wachs *et al* (1).

The complete apparatus consists of the pressure test-tube assembly shown in Fig. 1. Glass tubing with an internal diameter of 10 mm. and an external diameter of 15 mm. is made into test tubes exactly 6 inches long. The open end is sawed square and fire-polished, and finally the whole tube is carefully annealed. A mark is etched at the point where it contains 10 grams of Freon.

The tube 1 is held against the valve 2 in the frame 3 by the screw plug 4. A Neoprene washer, 5, is used to make the seal between the glass and valve 2. A pad of leather, 6, in a depression in the screw plug 4 is used to protect the tube when pressure is applied.

* Dr. Goodhue's work and preparation of this paper was during his association with the Bureau of Entomology & Plant Quarantine, U.S.D.A.

Pressure test tube assembly used at Beltsville laboratory for determining the quantity of material in pyrethrum extracts which is insoluble in Freon-12.



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The frame 3 is made from $\frac{1}{2}$ -inch brass pipe by cutting long windows in each side and threading the inside of each end. The valve 2 is a standard Y valve made for small refrigerant drums. The strainer in the valve is removed, and enough of the lower threads are cut away to give a flat seat for the Neoprene washer 5.

Procedure

The clean glass tube is dried at 110°C , cooled in a desiccator, and weighed to 0.1 mg. A sample of pyrethrum extract containing approximately 0.1 gram of pyrethrins is added, and the tube is weighed again to determine the exact weight of the sample. The tube is then placed in the frame and Freon-12 is introduced to the mark. The assembly is inclined at 10 degrees from the horizontal with the valve down and allowed to remain thus for 30 minutes. Most of the insoluble material collects on the wall of the glass tube near the surface of the liquid, which in this position is near the closed end. If a turbidity still exists after a half-hour, the tube is shaken for 5 minutes and then allowed to rest for 50 minutes. Usually one treatment of this kind coagulates the precipitate, but if the solution is still turbid the shaking is repeated. When all the waxes and resins have collected on the side of the glass tube, the valve is held downward and the solution is slowly released from the tube. It may be caught on a piece of waste cloth. Freon-12 is then intro-

duced into the tube up to the mark, rinsed back and forth gently so as not to remove the resins on the wall, and then discharged in the same manner as the solution. Only one rinsing is used, as this removes most of the residual matter soluble in Freon-12 without dissolving the resin on the side of the tube. The tube is removed from the frame, dried for 30 minutes at 110°C , cooled in a desiccator, and weighed. The Freon-insoluble material is calculated as the percentage of sample taken.

Results

Some of the pyrethrum extracts on the market before aerosols were developed contained as much as 10 per cent of Freon-insoluble material. Army specifications now allow no more than 4 per cent in pyrethrum extracts for aerosol use, and in nearly all samples examined the value has been below 2 per cent. The product from one manufacturer has contained less than 0.1 per cent consistently.

Most of the aerosol formulas which contain DDT require a cosolvent to keep the DDT in solution. Usually this cosolvent also greatly increases the solubility of the waxes and resins present in the pyrethrum extract. Table I gives the percentage composition of the aerosol formulations. Table II gives a comparison of the amount of Freon-insoluble material in several typical pyrethrum extracts and in some typical aerosol formulas.

Aerosol formulations dissolve

Table I—Percentage composition of aerosol formulations used in solubility studies.
Formula No.

Constituent	179	193	195	197	198	215
Pyrethrum extract (20%)	2	2	2	2	2	2
DDT	3	3	3	2	3	—
Aromatic petroleum solvent	—	7	7	10	7	—
Cyclohexanone	5	—	—	—	3	—
Lubricating oil No. 30	5	—	—	—	—	—
Methylene chloride	—	10	—	—	—	—
Propylene oxide	—	—	5	—	—	—
Sesame oil	—	—	—	—	—	8
Freon-12	85	78	83	86	85	90

Table II—Percentage of pyrethrum extract insoluble in pure Freon-12 and in certain aerosol formulations.

Extract No.	Pure Freon-12	179	193	195	197	198	215
I	2.9	0.30	0.67	0.05	0.50	0.30	0.55
II	.1	.24	.19	.025	.09	.15	.39
III	1.2	.24	.57	.01	.04	.18	.05
IV	3.5	.30	.52	.09	.05	.05	.32

more Freon-12-insoluble material than pure Freon-12 does. This is because they contain cosolvents that increase the solubility of the pyrethrum waxes and resins.

Summary

A simple method of determining the amount of material in pyrethrum extract that is insoluble in Freon-12 and in aerosol formulations containing Freon-12 has been described. Army specifications for pyrethrum extract for aerosols allow only 4 per cent of material insoluble in pure Freon-12. The amount actually found in samples examined ranges down to as little as 0.1 per cent. The amount of material insoluble in typical aerosol formulations is generally less, ranging from 0.5 per cent down to 0.025 per cent.

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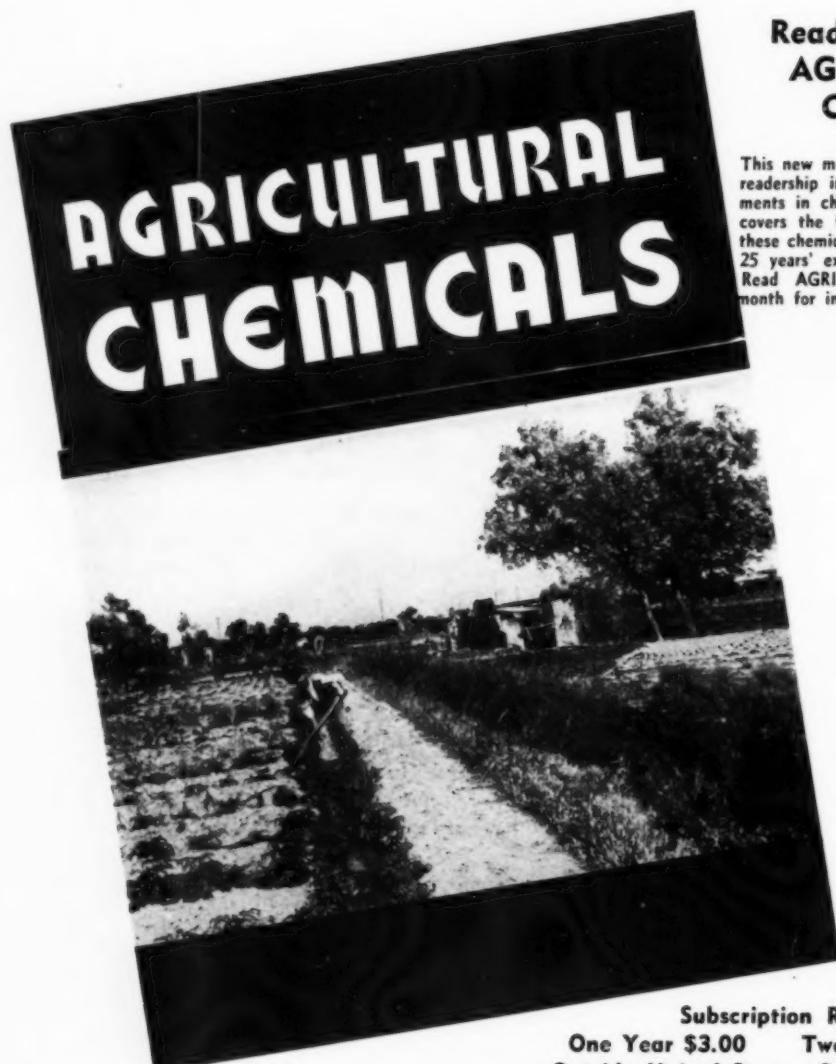
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Vaporizer for Glycols

A simple apparatus for the vaporization of glycols for killing such organisms depends on the use of wicks made of Fiberglas and an ordinary electric light bulb. The wicks stand in a reservoir of glycol, with the upper ends at the level of the incandescent bulb. The glycol rises in the wicks by capillarity, and the radiant heat in the vicinity of the bulb causes the glycol at the top of the wick to evaporate. This in turn is replaced by additional glycol rising in the wick. Although some heat is conducted down the wicks, the temperature of the reservoir does not rise above 50°C . Finally, a circular opening around the socket of the incandescent bulb admits air which, on being heated by the bulb, rises in a continuous upward stream, carrying off the glycol vapor.

The vaporizer does not have to be used with any particular glycol. At present there is no general agreement among all workers as to the glycol of choice, and it is entirely possible that those in current use, propylene and triethylene, may be superseded. T. N. Harris and J. Stokes Jr. *Science* 104, 423-5 (1946).

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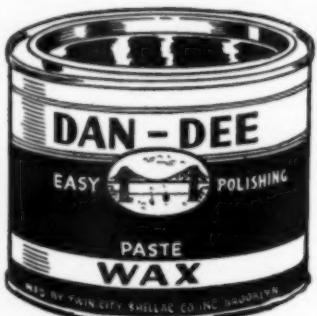
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PYRETHRUM REFUNDS

(From Page 123)

York, might have been the fact that often samples were not taken, nor tests made, within the fourteen day period after landing specified in contracts. Loose samples, when held for an excessive period, do lose a certain percentage of pyrethrins. It is pointed out by the importers, however, that delays which occurred were simply due to an excessive volume of work being done by the two laboratories, and it is pointed out also that both the KFA laboratory, and the one testing for the importers, were equally responsible for such unavoidable delay.

Also under discussion is the possibility that the two laboratories may not have used exactly the same technique, due to changes in published procedures often adopted by individual laboratories. The Seil method, incidentally, has been revised in numerous details since originally published. The revised version, it is hoped, may be readied for publication some time this year, which would eliminate at least this one possible cause of confusion in reconciling divergent results of different laboratories.

Recent arrivals of pyrethrum flowers from Kenya are reported to be testing considerably higher than the disputed shipments of early 1946. It is of course usual for flowers originating from a fall crop to be of higher

test, and flowers now coming in were harvested in Kenya in the fall months of 1946. The price to the importer for pyrethrum of fair average quality is currently 32½c per lb. This compares with a pre-war figure of approximately 18½c plus war risk and other landing charges. Importers are naturally reluctant to see anything that further increases cost of pyrethrum to the insecticide manufacturer, as they quite understandably do not want high cost of the product to act as a handicap to expanding use.

Pyrethrum is already priced well above its pre-war level, they point out. If the refunds are not made, this will have the effect of boosting the price approximately four cents per pound more, for of course a larger quantity of low test flowers are naturally required in making extracts of standard strengths. Whether or not pyrethrum can stand such an additional burden in its increasingly severe competitive battle with the new synthetic toxicants, is a question which is currently giving pyrethrum importers much cause for concern.

SANITATION CONTROL

(From Page 123)

The outstanding features of importance in the education of persons employed in food establishments could be classified as first—personal cleanliness and clean habits. second—the care necessary in handling and storing of foods, third—the necessary care in dispensing of foods and last—the utensils used must be clean and sterile. This can be accomplished by demonstrations by trained personnel.

In the past, the control of insects in food establishments has not been given too much consideration because the insecticides used and the various combinations of insecticides, together with the means of applying them were for the most part manually operated. The new insecticides now available and the new mechanical automatic sprayers have very definitely made it possible to rid food establishments entirely of the various insect pests which commonly infest them. All food establishments should be sprayed regularly with automatic sprayers, or other suitable dispensing

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devices designed to produce a fine mist which will reach into every crack and crevice and eliminate entirely any insects which may be present.

The problems of sanitation control faced by the public health officer are difficult ones, but a beginning has been made in their solution. Further effort will be necessary by Public Health officials in the role of educators along the lines which have been mentioned to obtain maximum results.

NEW INSECTICIDE (From Page 119)

does not produce a satisfactory knockdown. This can be provided, however, by the use of one of several chemicals. For example, "Thanite"^a (isobornyl thiocyanacetate), as either a 1.0 or 2.5 per cent by volume additive to formulations of 3956, effected a complete knockdown within five minutes and increased, also, the 24-hour mortality.

Effect of storage on 3956.—Samples of 3956, prepared with "Deobase" and exposed on a window sill to diffused daylight and direct sunlight in clear glass bottles at room temperatures, were tested at monthly intervals against the house fly by the Bell-Jar Method. No appreciable loss in toxicity occurred during 14 months of storage under the described conditions. A 0.1 per cent weight-volume "Deobase" formulation of 3956 which established an AA rating in March, 1945, established the same rating in May, 1946.

Summary.—The performance of the chlorinated bicyclic terpene (3956) in the case of certain household insects approximates that of DDT. Both chemicals are relatively slow-acting; both exhibit a high kill at low concentrations; and both display a marked residual effect. Synthetic 3956 and DDT sprays proved equally and highly toxic to the house fly. When compared as residual toxicants over a 12-month period, complete kills of this species were effected by both compounds in essentially the same time. Used as a spray against the German cockroach, 3956 was superior to DDT at all con-

^a U. S. Trade Mark 379,396; July 9, 1940.

Table 7.—Effect of dry-cleaning solvents; 3956; fabric pests

Treatments	Injury	Survival in Per Cent	Siftings or Frass in Milligrams
Red upholstery cloth treated with 1.0% carbon tetrachloride solution of 3956 at rate of 2.0 cc. of solution per gram of fabric	Trace	70	1
Same as above, but soaked in extract of 100 cc. Varsol for one hour and then air-dried for four days.....	Severe	100	17

Table 8.—Mortality data; 3956; bed bug

Treatments ¹	Number of Bed bugs	Mortality in Per Cent	
		24 Hours	48 Hours
0.3% 3956 in Deobase.....	60	18	57
3.5% 3956 in Deobase.....	61	36	85
5.7% 3956 in Deobase.....	62	52	94
OTI	61	44	69

¹ 0.25 cc. quantities of all treatments.

Table 9.—Residual toxicity; 3956 and DDT; bed bug

Treatments	Number of Bed bugs	Dead and Moribund in Per Cent	
		24 Hours	48 Hours
DDT	110	64	89
3956	133	30	95

centrations except five per cent; at that rate, both of them killed 100 per cent of the test insects. Dust formulations of 3956 (10 per cent) were likewise successful. Highly satisfactory results were obtained with the black carpet beetle, the furniture carpet beetle, and the webbing clothes moth. However, certain dry-cleaning fluids, as applied to the treated fabrics, rendered 3956 partially to wholly ineffective by simple solvent extraction. A high mortality was recorded when 3956 was used in direct and in residual sprays against the bed bug. The poor knockdown property of this insecticide, and of DDT as well, can be improved adequately by several chemicals, including "Thanite" (isobornyl thiocyanacetate), as additives for this specific purpose. Normal storage conditions have no appreciable effect upon the toxicity of Synthetic 3956.

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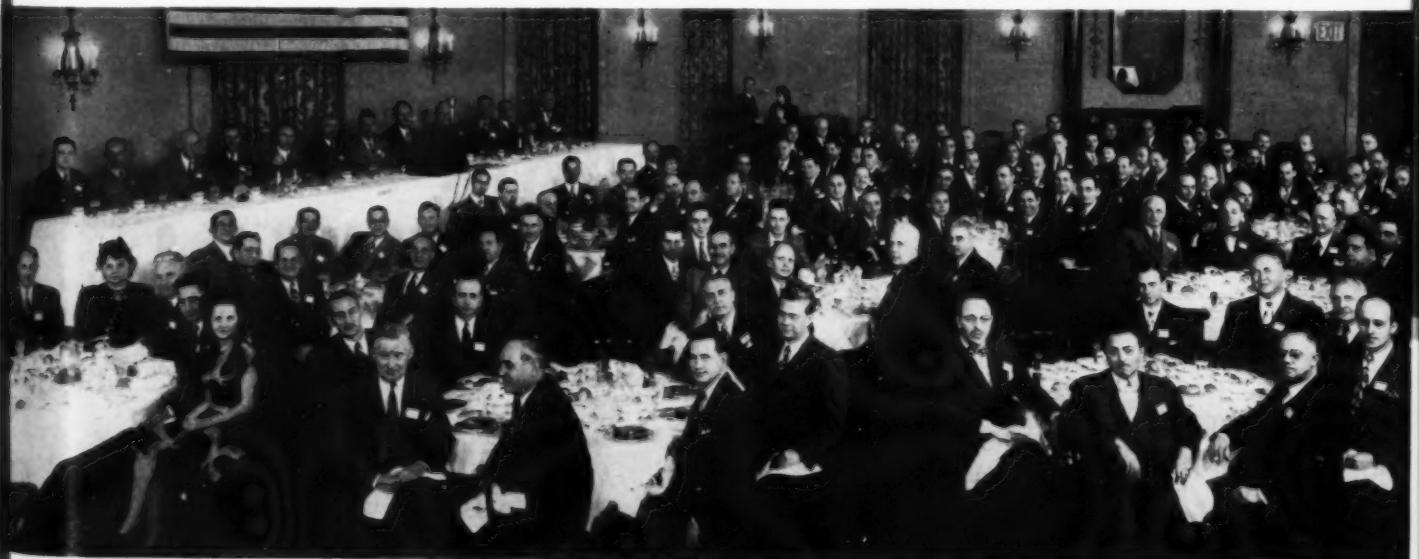
Left: Western regional meeting, National Sanitary Supply Ass'n., Nov. 15 and 16th, San Francisco. Above: Wm. H. White, western regional vice-president opens meeting. Seated are Jules Lovinger, Lovinger Disinfectant Co., Salt Lake City, vice-president of the association; and Leo J. Kelly, executive vice-president of NSSA. Below: Eastern regional meeting of NSSA, New York, Dec. 5th.

REGIONAL meetings conducted this year in Atlanta, San Francisco, and New York City by the National Sanitary Supply Association met with enthusiastic support of the members, according to Jack Varley, of Baird & McGuire, Inc., St. Louis, president of the association. One of the big things the association hoped to accomplish was to get both manufacturers and distributors better acquainted. At the meetings, manufacturers gave the distributors first hand information on the

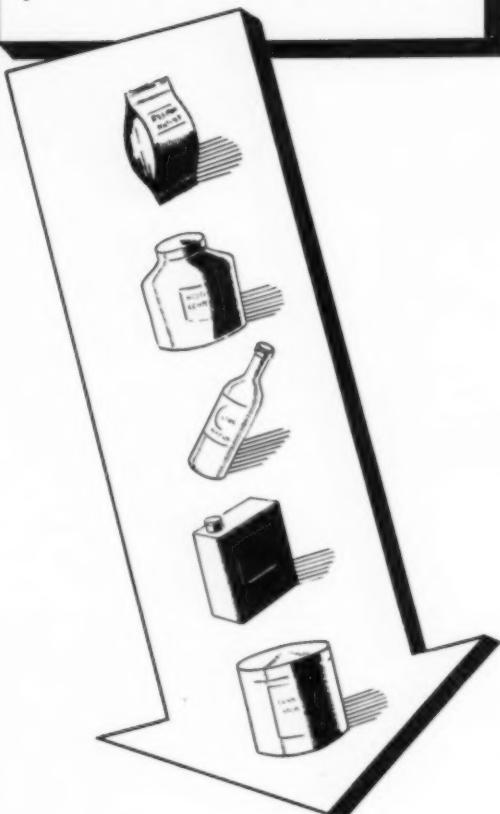
newest developments in their lines as well as picturing the supply future. Distributors conducted panels and discussion forums on sales, sales management, costs, etc. In addition members have organized to carry on the program by holding monthly meetings in their local cities.

At the eastern regional meeting, December 5th, in New York, Leo J. Kelly, executive vice president of the association, reporting on a survey made among distributor members

stated, "Now is the time to do more detailing of your products — give distributors greater help with which to make sales of your products — and perhaps do some revising of your discount structure." Mr. Kelly pointed out that, according to the survey, the five products giving the greatest volume of business to sanitary supply dealers are: soap (65 per cent), wax (44 per cent), brushes (37 per cent), cleaners (36 per cent), and disinfectants (35 per cent).



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TECHNICAL

Briefs

From Current Literature in the Sanitary Products Field

Carnauba Wax Substitute

Higher N-acyl derivatives of monoaminobiphenyl, with 12 or more carbon atoms, are substitutes for carnauba wax. For example, in a wax-gel shoe polish, use ortho-stearamidobiphenyl 6 parts, candelilla wax 14, beeswax 2, paraffin 4, and turpentine 74 parts. In a paste polish use para-stearamidobiphenyl 8 parts, hydrogenated castor oil 8, paraffin 8, and mineral spirits 76 parts. In a solution-type floor or furniture polish, use ortho-stearamidobiphenyl 2 parts, beeswax 2, paraffin 2, and mineral spirits 94 parts. In an emulsion-type polish use ortho-stearamidobiphenyl 7 parts, beeswax 1, paraffin 2, stearic acid 1, morpholine 0.25, and water 88.75 parts. In the latter instance the waxes, fatty acid, and wax substitute are melted by heating to a temperature just above the melting point of the mixture. The aqueous solution of morpholine is added and the entire mixture stirred until a homogeneous emulsion is formed. D. Aelony, to Monsanto Chemical Co. U. S. Patent No. 2,404,896.

in the air. Oiling floors of wood or linoleum with spindle oil is a good means of reducing the dust in the air. Bedclothes have also been effectively treated with an oil-in-water emulsion to reduce dust. *Manufacturing Chemist* 17, 431-3 (1946).

Comparative Toxicity DDT

A study of the comparative toxicity of DDT and some related compounds to fish and to mosquito larvae showed that the median lethal dose of DDT is approximately 0.1 p.p.m. for goldfish, 0.01 for gambusia, and 0.001 for mosquito larvae. Therefore the goldfish were 1/100 and the gambusia fish 1/10 as susceptible as the mosquito larvae, provided the DDT was evenly distributed in the water and had equal chances of penetrating the organisms. Mosquito pupae were much more resistant than both the larvae and gambusia.

Of the other compounds studied, DFDT, 1-trichloro-2,2-bis(parafluorophenyl)-ethane, was relatively more toxic to the larvae than to fish. For this reason DFDT may have possibilities as a larvicide; at least it seems worthy of field test, especially in view of a rapid action. E. P. Odum and W. T. Sumerford. *Science* 104, 480-2 (1946).

Aerosol for Mosquitoes

"Insektol," a mixture of aromatic hydrocarbons and naphtholsulfonic acids, gave 98.9-100 per cent kill of mosquitoes when used in a closed room and when about 30 cc. of 15 per cent aqueous solution was used per square meter of space. The odor re-

mains for 5-6 days but does not have mosquito-repelling properties. S. S. Kucher. *Vrachebnoe Delo* 26, 246 (1946).

Insect Repellents

para-Methoxybenzyl alcohol, para-ethoxybenzyl alcohol, para-propoxybenzyl alcohol and related alcohols, proved highly effective as repellents for mosquitoes. para-Methoxybenzyl alcohol was very effective in preventing attachment of chiggers to clothing. These compounds may be applied to exposed parts of the body or to clothing undiluted, in various suitable solvents, or incorporated in powders, pastes, or creams. Only para-methoxybenzyl alcohol at full strength was irritating to the human skin. The highly repellent action of ortho-methoxybenzyl alcohol was unexpected and could not have been predicted from the performance of the other compounds. H. A. Jones and B. V. Travis, to the U. S. Secretary of Agriculture. U. S. Patent No. 2,400,006.

Comparison of DDT Isomers

As compared with p,p'-DDT, the o,o'-DDT isomer was found to be of a very low order of toxicity against the adult and fourth-instar larvae of the common malaria mosquito and the adult housefly and body louse. Although o,p'-DDT was ineffective against adult mosquitoes, houseflies and body lice, it was found to be a fairly effective anopheline larvicide. S. J. Cristol, H. L. Haller, and A. W. Lindquist. *Science* 104, 343-4 (1946).

Fumigation Agents

During two trial fumigations of empty bags in barges, with methyl bromide, the penetration of this gas was studied by the measurement of gas concentrations. In the second trial, the loaded barge was also treated with hydrogen cyanide, so that a strict comparison could be made between the performances of the two fumigants. The rates of airing were also compared.

The data indicate that methyl bromide is much more suitable than hydrogen cyanide for fumigation under these conditions. The period of

Air Disinfection

The essential action of disinfectant aerosols is the concentration of molecules of the disinfectant in vapor form on bacterial droplets. In wards for streptococci patients, introduction of the vapors of triethylene glycol reduced the beta-haemolytic streptococci in the air by about 75 per cent. Later studies in hospitals showed that the combination of glycol vapor plus dust-suppressive measures resulted in a 94 per cent reduction of streptococci

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fumigation with methyl bromide could be reduced to 24 hours, whereas with hydrogen cyanide as fumigant a period of several days must be allowed for airing. With methyl bromide, unloading could normally be commenced 24 hours after the end of fumigation. W. B. Brown and S. E. Lewis. *J. Soc. Chem. Ind.* 65, 241-5 (1946).

Chigger Repellents

In tests with wearing apparel impregnated with two grams of material per square foot of cloth — about eight per cent by weight of the cloth — the following compounds proved equal to or better than benzyl benzoate against chiggers: benzil, phenyl benzoate, 3,5-dimethyl phenyl benzoate, phenothioxin, para-methoxybiphenyl, alpha-methyl benzyl benzoate, as well as other similar benzoates. Benzil gave protection after three washings of the treated garments; phenyl benzoate protected for two washings. The other compounds gave a higher percentage protection after the third washing than benzyl benzoate. F. M. Snyder and F. A. Morton. *J. Econ. Entomol.* 39, 885-7 (1946).

Spray Test Chamber

The construction and operation of a special spray test chamber are described, which eliminates the necessity of washing or covering the interior of the chamber after each test. The insects are exposed in small screen wire cages by a swinging-pendulum method to a fine mist of the insecticides being tested. A. W. Lindquist and A. H. Madden. U. S. Dept. Agr., Bur. Entomol. Plant Quarantine ET-229 (1946).

Fly Control in Barns

Experiments with DDT in water, in oil, and as dusts applied to the interiors of barns showed that effectiveness on the active fly population increased when the DDT concentration was increased and the temperature decreased. Concentrations of 0.2 per cent were ineffective while five per cent DDT spray gave excellent results. All types of treatment killed flies for several weeks. C. H. Brett and F. A. Fenton. *J. Econ. Entomol.* 39, 397-8 (1946).

Strong Germicide

Cetyl pyridinium chloride is germicidal in dilutions of 1:2,000 to 1:20,000 against a variety of Gram positive and Gram Negative bacteria, certain common pathogenic fungi, and the flagellate, *Trichomonas vaginalis*. It is effective in both acid and alkaline conditions covering pH 2 to 10, at room temperatures and at 37°C. The presence of animal serum reduces the effectiveness only slightly and only in some instances. The compound is non-toxic and should be a very versatile and valuable disinfectant. Its action cannot be compared directly with that of phenol because of its different chemical nature. R. Quisno and M. J. Foter. *J. Bact.* 52, 111-17 (1946).

Impregnated Clothing

The minimum safe degree of impregnation of garments for protection against lice is about 0.1 per cent DDT. The chief loss of insecticidal power of impregnated garments results from the loss of nap. Impregnated garments transfer their insecticidal power to unimpregnated garments in contact with them. DDT poisoning in the louse may require six hours for its appearance. A. J. Musgrave. *Bull. Entomol. Research* 37, 43-56 (1946).

Derris and Lonchocarpus

Roots of (1) *Derris elliptica* var. Sarawak Creeping, (2) *D. elliptica* var. Changi No. 3 (low in rotenone), (4) *Lonchocarpus utilis*, and (5) *L. chrysophyllus*, all grown in Puerto Rico except those of *L. utilis* which was grown in South America, were prepared to equal rotenone content and tested biologically against houseflies (*Musca domestica*) and chemically for rotenone plus rotenoids by the colorimetric method of Jones. The derris samples were relatively more toxic than the lonchocarpus samples, which indicates that the extractives other than rotenone in derris were more toxic than those in Lonchocarpus. Even the low rotenone derris was more toxic than lonchocarpus. Sample (1) showed the greatest toxicity due to substances other than rotenone. Sample (4) showed some toxicity from extractives other than rotenone, but sample (5) showed practically none. M. A. Jones, W. A. Gerbdorff, and E. R. McGovran. *J. Econ. Entomol.* 39, 281-3 (1946).

vives other than rotenone, but sample (5) showed practically none. M. A. Jones, W. A. Gerbdorff, and E. R. McGovran. *J. Econ. Entomol.* 39, 281-3 (1946).

DDT Emulsions

DDT emulsions are readily prepared through the use of a liquid non-ionic emulsifier, nonaethylene glycol mono-oleate S725, claim Rex Campbell & Co. Ltd. of London. Excellent and economical emulsions are obtained by dissolving the DDT in a solvent such as xylol, to which about 10 per cent of the emulsifier is added. The mixture is then added to water, and requires little stirring.

"Emulgor A" is being used very successfully as a wetting agent to produce DDT wettable powder. The "Emulgor A" is melted and sprayed hot onto the powder, which usually consists of an intimate grinding of DDT with talc or other inert material. Such wettable powders are added to water as required and applied as emulsion sprays. *Chem. Trade J.* 119, 378 (1946).

Cosolvent for Insecticides

A method for solubilizing rotenone or its extracts in petroleum oils for insecticidal use utilizes a cosolvent consisting of secondary butyl phenols. About 5-7.5 per cent of cosolvent is required to prepare a stable solution in kerosene, and 10 per cent is needed for a white oil solution. The resulting solutions are effective as fly sprays or can be used as aqueous emulsions. E. C. Britton, G. H. Coleman, and K. D. G. Clack, to The Dow Chemical Co. U. S. Patent No. 2,396,983.

Agent for Killing Lice

Insecticide SK, a chlorination product of pine turpentine, is a thick paste, insoluble in water, slightly soluble in alcohol, readily soluble in ether and in light oils. It is used in 50 per cent ointments or soap blends to combat lice. It has no toxic action on the skin in normal use, either by direct contact or by resorption. A. P. Belikova. *Farmakol. i Toksikol.* 8, No. 1, 53; through *Chem. Abs.*

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DDT Smokes

Blotting paper impregnated with DDT and potassium nitrate will produce a heavy smoke containing DDT, when burned. Flies (*Musca domestica*, *Fannia canicularis*, *Stomoxys calcitrans*), mosquitoes (*Culex* spp.), thrips, clothes moths, and pollen beetles (*Meligethes aeneus*), in closed containers, were knocked down in 5 seconds by the DDT-laden smoke; aphids recovered from its effect, *M. domestica* died in several hours, and thrips died in 8-9 hours. Smoke from potassium nitrate-impregnated paper was not insecticidal.

Deposits from the smoke of paper containing 0.13 mg. of DDT were also insecticidal. The method has possibilities for treating greenhouses, granaries, stores, and ships. Some experiments with DDT sprays for cow barns are reported. M. Cohen. *Ann. Applied Biol.* 33, 125-6 (1946).

Agent Against Ringworm

The action of various concentrations of the dry powder of monopyridine iodine (I) para-nitrobenzoate in sterile talc was tested against the ringworm fungi, *Trichophyton gypseum* and *Microsporum audouini*. The results show that low concentrations of the drug are effective not only against these fungi but also are extremely active toward the dried spores of the fungi. J. Kleinberg and E. Meyer. *Science* 104, 398-9 (1946).

Aerial Disinfection

Conditions governing the action of chemical agents against bacteria in the atmosphere are discussed. Vapors of lactic acid, mandelic acid and triethanolamine, at concentrations of 10, 8, and 150 milligrams respectively per cubic meter of air, gave good kills of the organisms of saliva (*Streptococcus salivarius* and others) at a relative humidity of about 70 per cent and temperatures of 60-70° F. Other acids found effective in destroying such organisms include glycolic, lactic, *alpha*-hydroxyacrylic, *alpha*-hydroxy-caprylic, *alpha*-hydroxycapric, *alpha*-hydroxy-alpha-methylbutyric, cyclopentanol-1-carboxylic, and cyclohexanol-1-carboxylic.

The mono- methyl, ethyl, allyl, butyl, and hexyl esters of maleic acid, and the mono- ethyl and hexyl esters of succinic acid, were also effective. Of the straight-chain acids, lactic acid was most bactericidal. The advantage of the disubstituted acids and the maleic esters is that they can be volatilized by simple heating, at a rate sufficient to maintain a useful bactericidal concentration. J. E. Lovelock et al. *Nature* 153, 20-1 and 156, 782-3.

DDT on Flowing Water

DDT in oil solution is an effective mosquito larvicide for treating flowing water. Dosage will vary with the width and length of the stream, rate of flow, and quantity of vegetation that impedes the flow at mosquito-breeding places. A dosage of two gallons of five per cent DDT solution sufficed to cover 2280 yards of a 30-foot river flowing 75 feet per minute. C. R. Ribbands. *Bull. Entomol. Research* 37, 105-12 (1946).

Capsuled Insect Repellent

A new method of packaging an insect repellent is to put up appropriate amounts in small gelatin capsules, which may be clear and transparent, or produced in any desired color. Bath oils also are being sold in capsules. *Perfumer & Essen. Oil Review* 37, 205-7 (1946).

Copper-treated Sandbags

Sandbags treated with fungicidal compounds were subjected to service tests at the Southern Regional Research Laboratory. The treatments evaluated in terms of copper naphthenate, which was given an arbitrary value of 100 units, were fungicidal in the following decreasing order:

Phillips Naphtha Folder

Bulletin No. 150, recently released by Phillips Petroleum Co., Bartlesville, Oklahoma, gives data on three, new narrow-boiling range, highly paraffinic solvent naphthas, "Soltrol-100," "Soltrol-140," and "Soltrol-180." Because of low-odor characteristics, the "Soltrols" are claimed to be good base oils for insecticides. "Soltrol-100" is recommended as a rapidly evaporating moth-proofing base. "Soltrol-140" and "Soltrol-180" are best for household spray bases. The products are claimed to have shown synergistic action in the laboratory with commonly employed toxicants. They contain practically no unsaturated or aromatic hydrocarbons. Copies of the "Soltrols" booklet may be obtained from the company.

DDT Estimation

A procedure is described for determination of DDT in mixtures containing as much as 90 per cent of sulfur. Known quantities from 0.002 to 0.184 gram of DDT, with or without sulfur present, gave recoveries of 91-96 per cent. Use of the method on certain sprayed crops reproducibly indicated residues of 1-9 p.p.m. W. E. Baier, E. J. Edmonds, C. W. Wilson, M. I. Elliot, and F. A. Gunther, *Science* 104, 376-7 (1946).

The data show the superior resistance in service of cotton treated with agents containing creosote. The service tests confirmed the dependability of the accelerated soil-burial method for evaluation of treating agents. J. D. Dean, W. B. Strickland, and W. N. Berard. *Am. Dyestuff Reporter* 35, 346-8 (1936).

Treating Agent	Copper Concentration Per-cent	Service Rating
Copper naphthenate-creosote	1.0 copper	176
	15 creosote	
Cuprammonium-creosote	1.5 copper	173
	10 creosote	
Copper naphthenate	1.0 copper	100
Cuprammonium carbonate	1.5 copper	100
Copper tallate	1.0 copper	82
Copper oleate	1.0 copper	73
Copper Ammonium fluoride	1.0 copper	66
Copper resinate	1.0 copper	45
Untreated controls	0.0 copper	9



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NEWS . . .

Celebrates 25th Year

Dixie Disinfecting Co., Dallas, celebrated its 25th year of business on Saturday, Dec. 27th according to report from S. P. Solomonson, vice-president of the company. A buffet lunch was served at the office. The company manufactures disinfectants, insecticides, soaps, and sanitary goods.

New Roach Powder

The Arfax Division of Fairfield Laboratories, Inc., Plainfield, N. J., has recently put on the market a new non-toxic powdered insecticide said to be particularly effective against roaches, silverfish, ants, waterbugs, etc. It is sold in one, five and twenty-five pound containers under the name "Arlax PCH Insect Killer."

Knox Acquires Mono

Knox Chemical Co., Chicago, recently announced the acquisition of Mono Chemical Co., Chicago. Sol Lefkowitz of Mono Chemical Co. has joined Knox as vice-president and general manager. He has been associated with the insecticide industry for twenty-six years.

Continental Names Gordon

Continental Chemical Co., Sacramento, announced in mid-December the appointment of John A. Gordon as director of chemistry. He was formerly associated for 10 years with California Ink Co. in their research laboratory, with the exception of the four years he served with the U. S. Navy. Mr. Gordon will do research and formulation work in his new position.

Lasker Award to USDA

At the 1946 meeting of public health workers held November 12th at Cleveland, a Lasker Group Award was presented to the Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture, by the American Public Health Association. The award

was issued in recognition of distinguished service in the solution of prob-

Julius Hyman & Co., Denver; Seaboard Mfg. Laboratories, Inc., Philadelphia; Tesco Chemicals, Inc., Atlanta; Trio Chemical Works, Inc., Brooklyn; Companies elected as associate members are: Prel, Inc., East Orange N. J.; and Wax & Rosin Products, New York.



James E. Ferris of Niagara Alkali Co., New York, newly elected president of the Salesmen's Association of the American Chemical Industry, Inc. Jim was vice-president of the organization last year, and for many years has taken an active part in its affairs.

lems involving the health and comfort of the armed forces, with particular reference to insect-borne diseases. Dr. F. C. Bishopp, Assistant Chief, in Charge of Research, of the Bureau received the award for the Bureau.

Warwick Wax Appoints

Warwick Wax Co., a subsidiary of Sun Chemical Corp., New York, will be represented in Canada by Natural Products Corp., Quebec, as exclusive sales agent. A new emulsifiable petroleum wax replacement for vegetable waxes will be introduced to the Canadian market under the

NAIDM Elects New Members

At the recent New York meeting of the National Association of Insecticide and Disinfectant Manufacturers held early in December, the following companies were elected to active membership: Avilite Inc., Los Angeles; P. C. Cissel Co., Washington, D. C.; Edco Corp., Newark, N. J.; Fine Organics, Inc., New York; R. M. Hollingshead Corp., Camden, N. J.

Cube Price Advances

Since the termination of OPA price controls, a series of sharp advances have occurred in the price of cube root. During the major part of 1946, shipments from Peru to the United States were covered by a treaty between the two governments, but this lapsed after the agreed upon quantity of 4,000 tons of root had been shipped. Since that time Peruvian cube root has been offered in the world market and the price has been bid up rather sharply. The advance in raw material costs has made necessary price advances ranging up to 50 per cent on rotenone insecticides.

Join Dreyer Staff

Fred C. Theile, Jr., son of the late Fred Theile, former president of P. R. Dreyer Inc., New York, is now a member of the chemical laboratory staff of that company. A graduate of Rutgers University in chemistry, Mr. Theile was engaged in confidential research for the Navy for several years.

Daniel A. Beyer, son of Fred J. Beyer, vice-president, who has been associated with the sales department of Dreyer for many years, joined the company staff on January 1. He is a graduate of Blair Academy and also attended the University of Pennsylvania.

Abstract Rotenone Patents

A compilation of abstracts of 181 foreign and domestic patents by R. C. Roark, Bur. Ent. & Plant Quar., Agr. Res. Admin., USDA, was released late in November and brings up to date information on new solvents, synergists, emulsifiers, and stabilizers for use with rotenone. Presentation is by related patents rather than according to their date of issue. The patents are also listed by number, and the holders by alphabetical arrangement.

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Essential Oil Assn. Meets

The annual meeting of the Essential Oil Association was held at the Hotel McAlpin, New York, December 10th. R. C. Schlotterer, managing director of the association, presided in the absence of Wm. Schilling of Norda Essential Oil Co., E.O.A. president. The afternoon session was given over to the agenda of the Scientific Committee. Dr. E. C. Kunz, Givaudan-Delawanna, Inc., New York, spoke on accepted standards on a number of essential oils and particularly on the adulteration of oil of citronella, Ceylon. He mentioned that the first edition of a standards book by the Scientific Committee would soon be published.

Dr. J. L. Powers, chairman of the committee on the *National Formulary*, stated that the new edition, VIII, published Nov. 25th, 1946, was to be available in mid-December, and would become official April 1st, 1947. The edition contains 200 new titles on drugs and 200 new monographs. Other reference book subjects discussed during the afternoon session were: "The New U. S. *Pharmacopoeia*," by Dr. E. F. Cook, chairman of the revision committee of the *Pharmacopoeia*; and "U.S.P. and N.F. Suggestions," by F. L. Hilbert, Fritzsche Brothers, New York.

Dr. G. Brannigan, Ungerer & Co., New York, discussed "Solubility Problems in U.S.P. Essential Oils"; and Dr. A. Warren, Dodge & Olcott, Inc., New York, discussed "Proposed Standards and Specifications for Oil of Citronella of Ceylon." "Proposed Standards and Specifications for Terpineol and Terpinyl Acetate" were explained by Dr. W. C. Muelly, E. I. du Pont de Nemours & Co., Wilmington; and Dr. A. Fiore, Givaudan-Delawanna, Inc., New York, spoke on, "Standards and Specifications of Oil of Lemongrass and Heliotropine."

SOCMA Re-elects Dorland

Ralph E. Dorland, manager of the New York office of Dow Chemical Co., was re-elected president of the Synthetic Organic Chemical Manufacturers Association at the recent annual

meeting in the Hotel Roosevelt, New York, December 17. Vice-presidents include E. H. Killheffer of E. I. du Pont de Nemours & Co., Wilmington, and Dr. E. C. Kunz of Givaudan-Delawanna, Inc., New York.



WILLIAM R. JANNEY

Janney Nat. Can V-P

William R. Janney has just been elected vice-president of National Can Corp., New York. He will continue to act as general sales manager of National's general line sales division. Mr. Janney has been connected with National Can Corp. for the past seventeen years.

National Oil Now NOPCO

Directors of the National Oil Products Co., Harrison, N. J., have voted to change the firm's name to Nopco Chemical Co. The change is subject to approval of stockholders at the annual meeting in March.

Enjay Formed Thru Merger

The formation of a new organization known as Enjay Co., Inc., New York, reported as effective January 1, 1947, is the result of a merger of Standard Alcohol Co., New York with the Chemical Products Department of Stanco Distributors, Inc. The new company is a subsidiary of Standard Oil Co. of New Jersey. "Petrohol," and other related synthetic chemicals derived from petroleum that have been marketed by Standard Alcohol, will henceforth be handled by Enjay Co. through the same personnel.

P.E.A. Honors Pomerantz

The Professional Exterminators' Association, New York, gathered at the Hotel Brewster, New York, on December 9th, to honor member Charles Pomerantz, Bell Exterminating Co., New York. Mr. Pomerantz told the group about some of the difficulties with which he was faced when he was helping to trace down the "disease in Queens" which achieved much publicity last July in the New York area.

Mr. Pomerantz, acquainted with the fact that a mysterious non-fatal fever had laid low ninety-two residents of Regency Park, Queens, New York, collected some mites while on an exterminating assignment in this area. Suspecting that these mites might be the carriers of the bacteria associated with the fever, he brought them to Washington where they were identified by the Division of Insect Identification, Bur. Ent. & Plant Quarantine, USDA, as *allodermanyssus sauguineus*, a carrier of a type of bacteria that sometimes affects man. The newly recognized mite fever was called "Rickettsial Pox."

Penna. PCOs Elect Meyer

Martin Meyer was elected president of the Eastern Pennsylvania Pest Control Association at the recent quarterly meeting held December 17 at the Benjamin Franklin Hotel in Philadelphia. Walter Cholerton was named Philadelphia vice-president, and Arthur Hammil vice-president for the out of town district. R. H. Bauer is secretary and Walter Boohar, treasurer. W. C. Sharp was chosen a director for a three year term. The local Philadelphia group elected John G. Vogel as general chairman for the coming year. The National Pest Control Association will hold its annual meeting in Philadelphia in 1947. Mr. Vogel serves as chairman of the national convention committee, with Mr. Meyer as local convention chairman.

Rhodes Chemical Moves

Rhodes Chemical Corp., Philadelphia, report that their plant has been moved from Jenkintown, Pa. to the present location of 3227 Frankford Ave., Philadelphia.

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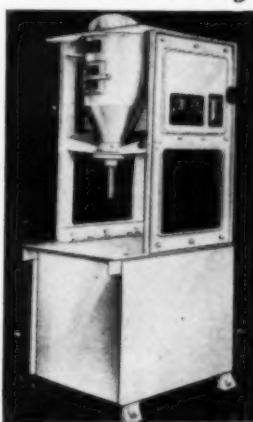


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DCAT Section Elects

The Drug, Chemical and Allied Trades Section of the New York Board of Trade elected officers on Dec.



CARLE M. BIGELOW

17th to serve during the next fiscal year. The results of this election which took place at the organization meeting of the new executive committee, held at the Drug and Chemical Club, New York, follow: Chairman—Dr. Carle M. Bigelow, Calco Chemical Division of the American Cyanamid Company, Bound Brook, N. J.; vice-chairman—Fred J. Stock, Chas. Pfizer & Co., New York; treas.—Hugh S. Crosson, McKesson & Robbins, Inc., Brooklyn; secretary—Helen L. Booth, New York Board of Trade, Inc., New York. Carl M. Anderson, Merck & Co., Rahway, N. J., was re-appointed counsel.

The retiring chairman, Harold M. Altshul, Ketchum & Co., New York, was presented with an engraved gavel in recognition of his services during the past year. Mr. Altshul automatically becomes a member for 5 years of the Section's advisory council.

Appointments at Magar

Magar Home Products, Inc., Cornwall Landing, N. Y. manufacturers of "Starvem" mothproofer, and other products, has announced the promotion of W. C. House to the position of president of the company. G. E. McElheny, who was formerly with Drackett Company, Cincinnati, has been appointed vice-president in charge of production. B. Robert Brown, for 12 years with S. C. Johnson & Son, Racine, Wis., has been ap-

pointed sales manager of the company. Newspapers and radio spots will be used in the 1947 campaign for "Starvem."

Givaudan Sales Meeting

The annual sales meeting of Givaudan-Delawanna, Inc., New York was held in New York Dec. 10, 11, and 12th, and was attended by the full staff of sales representatives for the first time since the war. The meeting was attended by Andre Givaudan, who had come from Switzerland for a short business trip. Plans were laid for an extensive study of the changes in the perfume raw materials industry that are coming about as a result of the return of formerly unavailable essential oils and their derivatives, and the possibility of further changes in the case of a partial return to pre-war price levels.

Elects H. L. Sherman

The American Council of Commercial Laboratories at its annual meeting held recently in Chicago, elected H. L. Sherman, Skinner & Sherman, Inc., Boston, as president of the Council for 1947. The Council, which is composed of 32 independent research and testing laboratories, recently published a new Directory which was described in a recent issue of this magazine.

Housefly Control Leaflet

Leaflet 182, recently released by Bur. Ent. & Plant Quar., Agr. Res. Admin., USDA, is entitled, "Housefly Control." The nine page leaflet describes methods of breeding, prevention, insect screens, fly traps, poisons and fly sprays. Copies may be obtained from the Supt. of Documents, U. S. Gov. Printing Office, Wash. 25, D. C.

Grattan Joins MM&R Sales

Magnus, Mabee & Reynard, Inc., New York and Chicago suppliers of essential oils, announced in December the appointment of John P. Grattan to its New York sales staff. Mr. Grattan's background has been in finance. He served in India and China with Naval Intelligence during the war.

DeMerell Heads Glass Sales

Anchor Hocking Glass Corp., Lancaster, Ohio, has announced that S. B. DeMerell was elected a vice-



S. B. DEMERELL

president at the directors meeting held December 12th.

Mr. DeMerell joined the Capstan Glass Company of Connellsville, Pa., an affiliate of the Anchor Cap & Closure Corporation, as sales manager in 1925. Following the merger of the Anchor Cap Corporation and its subsidiaries, including the Capstan Glass Company, with the Hocking Glass Company and its subsidiaries under the name Anchor Hocking Glass Corporation in 1937, Mr. DeMerell continued as sales manager of the Container Division. In his newly elected position, he will be vice-president and director of package sales for the container and closure divisions.

Market New Roach Trap

De Soto Chemical Co., Arcade, Fla., has announced a new device for control of roaches, silverfish, water bugs and crickets. Known as a "Gator Roach Hive," the trap consists of an open-end fiber tube containing an attractant gum.

BENZENE HEXACHLORIDE

(From Page 116)

France. Incidentally, before we can expect to get public acceptance in the United States, we must have benzene hexachloride in a form fully as acceptable, from the odor angle alone, as are the vast majority of sprays sold in this country today.



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Entomologists Meet

A joint meeting of the American Association of Economic Entomologists and the Entomological Society of America was held December 9-12, 1946, in Richmond, Virginia. Highlighting the meeting was a talk by P. A. Annand of the Bur. Ent. & Plant Quar., USDA, who stressed the need for preventive entomology and stated that prevention could best be furthered by close cooperation between government, state, and industrial leaders in meeting insect control problems by anticipation and with coordinated preventive measures.

The proposed revision of the Federal Insecticide Act and the need for uniform state legislation was discussed by W. G. Reed, Production and Marketing Administration, USDA. Mr. Reed pointed out that the revision would help to standardize among the states, labeling procedures, as well as colors for powdered insecticides; and would follow closely the Federal act

proposed last year, including however fungicides, herbicides, and rodenticides.

The Section on Insecticides featured a discussion of new toxicants from the points of view of chemical nature, relative insecticidal value, uses, toxicity to plants and animals and compatibility. Screening and laboratory testing methods received attention, in that new techniques, equipment and tests were reported and standardization of old methods reviewed. The formulation and preparation of insecticides were also considered. Improved methods of mixing, impregnating and emulsifying insecticides as well as the importance of physical properties of diluents, solvents, emulsifiers were commented upon. A. M. Boyce, Univ. Calif. Citrus Exp. Sta., discussed equipment and methods of application of insecticides, pointing out numerous new types of apparatus and explaining their application.

Hydro-Mist in New Location

Hydro-Mist Corp., announced in December the opening of a new plant and offices at 531-533 State Street, Glendale, Cal. The new location provides direct factory loading of the Hydro-Mist vaporizer. Simultaneously with this move, the Hydro-Mist Corporation has started production on an improved, streamlined model, "The Commander." The new model has increased chemical capacity, increased pressure chamber, greater-action auto-jet nozzle, and tamper-proof safety devices.

Swimming Pool Sanitation

Sanitation for the public swimming pool was the subject of a round table discussion during the Chicago convention last month of the National Association of Amusement Parks, Pools and Beaches. New disinfectants for pool and bath house use, new filtration methods and filter media, methods of algae control and kindred subjects were among topics presented. Foot baths and bather pre-cleansing were also considered. Among exhibitors in the trade show accompanying the meeting was the Peda-Spray Co., New York,

which displayed its "Peda-Spray" solution and automatic dispenser for athlete's foot prevention. Refinite Corp., Omaha, Nebr., also showed its line of chemicals and cleaning equipment for swimming pools.

Rohm & Haas Build in Texas

Rohm & Haas Co., Philadelphia, announced recently the acquisition of about 500 acres of land on the Houston Ship Channel, Deer Park, Texas, for a new plant to manufacture chemical products. Construction of the plant is expected to get underway early in 1947. The company operates plants at Bristol, Pa. and Philadelphia, and at Knoxville, Tenn., where it manufactures chemicals principally for the insecticide, leather, textile, and plastic industries.

Hercules Appoints Long

Dr. John M. Long, formerly manager of the sales research division of Hercules Powder Company, Wilmington, has been appointed special assistant to the general manager of the Paper Makers Chemical Department, the company announced December 20th.

Relax California DDT Code

The state of California requirements for labeling of economic poisons were recently revised relaxing the previous strict regulation regarding DDT poison labeling. Where packages of powdered materials contain 60 per cent or less of DDT, and where DDT is the only toxic component, it is no longer required that the poison label (skull and crossbones, and antidote) need appear. The new change affects only powdered materials; space sprays, oil and water base surface treatment materials, and aerosols are not affected by the revision and still require the poison label.

NSSA Spring Meeting Date

The National Sanitary Supply Association has set April 21-25, 1947, as the date for the national convention. The meeting will be held at the Morrison Hotel in Chicago and is expected to be the largest get-together in the history of the association. Details of the meeting will be forthcoming in an early issue.

Du Pont Reduces DDT Price

A 2½-cent per pound reduction in the price of carload lots of DDT, technical grade was announced Dec. 13, 1946, by E. I. du Pont de Nemours & Co., Wilmington. Effective January 1, the carload price will be 42½ cents, rather than 45 cents, per pound. At the same time, the company announced that the price of less-than-carload lots will be reduced from 48 to 45 cents per pound. Prices on less-than-ton lots are being cut from 50 to 48 cents per pound, the company said.

Entomologists Join Hyman

Dr. C. C. Compton and W. E. McCauley have become associated with Julius Hyman & Co., Denver, according to a report by that company in December. Dr. Compton was connected with the Illinois State Natural History Survey for 24 years. More recently both Dr. Compton and Mr. McCauley were entomologists with Velsicol Corp., Chicago. Julius Hyman & Co. manufacture "Octa-Klor," a chlorinated hydrocarbon insect toxicant with the empirical formula $C_{10}H_8Cl_8$.

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Release Insecticide Bill

The proposed uniform "State Insecticide, Fungicide, and Rodenticide Act" and explanatory material were released in final form in a bulletin, late December, by the National Association of Insecticide and Disinfectant Manufacturers, New York, the legislative committee and general counsel of which feel that the bill should be generally acceptable to the industry.

The bill has been patterned along the same general lines as the Federal Insecticide Bill which was proposed at the last session of Congress (H.R.5645). It is being published, in its entirety, in the January issue of *Agricultural Chemicals* but because of space limitations, only the points of difference from the Federal act are mentioned here. This bill differs from that one in the following major respects: The definition of "economic poison" has been amended to exclude concentrates and raw materials. The definition of "labeling" has been relaxed somewhat. The penalties for violation are less severe. The guaranty provisions have been deleted in their

entirety. The requirements for the "ingredient statement" have been amended.

The proposed uniform bill has been developed by the Council of State Governments in cooperation with interested agencies of the Federal Government and the various trade associations representing the industry. The bill will now be proposed to the state governments through the medium of regional meetings to be held under the sponsorship of the Council.

New Repellent Marketed

Unexcelled Chemical Corp., New York, has recently announced the marketing of their insect repellent product, "unXld 448" which repels mosquitoes, ants, gnats, etc. This repellent was recently developed by the Navy during the war. (*Soap & Sanitary Chem.* Nov. 1946 P. 116) Among other products manufactured by the company are a preservative called "Line-life," which protects rope, lines, tackle, etc., and a product called "De-K-Pruf," which prevents rot in wood and fabrics.

Ask Polish Approval Delay

A suggestion that the Rubber Manufacturers' Association delay proposed action regarding re-approval of a list of polishes was the subject of a resolution made by the Sanitary Specialties Scientific Committee of the National Association of Insecticide & Disinfectant Manufacturers at their December meeting in New York. Specifications of the Rubber Association require that a floor wax or polish contain no rosin and give a negative Lieberman-Storch test, but the Scientific Committee on Sanitary Specialties of NAIDM claims that this test gives a positive indication of rosin in compounds used to make floor polishes even when such compounds do not contain free or available rosin. The wax manufacturing members of NAIDM, feeling that certain features of the specification on wax polish as set up by the rubber-makers are not within the original intention, particularly the one about the test, plan to present a brief on the matter for the Rubber Manufacturers' Association to consider.

New Geigy Laboratory

Geigy Co., New York division of J. R. Geigy, S.A., Basle, Switzerland, has opened a new laboratory on a site adjoining its plant in Bayonne, N. J. The new facilities will offer opportunity for close collaboration between the technical staff of the American division and Geigy research abroad. The new laboratory will house both the chemists and entomologists of the research staff, and is headed by Dr. George R. Ferguson, chief entomologist.

Heyden Chemical Builds

Construction of a \$450,000 fine chemicals building as an addition to the Fords, N. J. plant of Heyden Chemical Co., New York, was announced Dec. 11th. Of brick, steel and concrete construction, the new building will provide an additional 5,000 square feet of floor space to be used in the production of organic chemicals. It will be two stories high except for the tower portion which will rise five stories to accommodate twin fractionating columns. The date of operation is, as yet, undetermined.



The young man in the picture is an exterminator, Chinese style. He does not do the active exterminating himself, but sells a rat poison on the streets of Shanghai. To attract attention to himself and his product, he wears about ten or fifteen good sized rats over his shoulder, to suggest the effectiveness of the product he sells.

This photograph was taken during 1945 by Robert W. Militzer, Lt. jg. USNR, (a nephew of Herman C. Militzer of H. & M. Laboratories, Toledo) while the Lieutenant's ship, the USS Samar, was docked in China.

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Every effort is made to keep this index free of errors, but no responsibility is assumed for any omissions.

Tale Ends

BEST advertising and merchandising job for a soap product over the past few years? In the humble, but emphatic opinion of the staff of this rag, Armour's "Chiffon Soap Flakes" is the winner,—and new champeen!

* * *

Henry Nelson, prez of Chemical Supply, Cleveland, former NAIDM prez, and Netherlands Consul for Ohio, recently sold us a ticket for a drawing for the benefit of a Holland Relief project. We note that second prize is a pair of hand-crocheted pillow cases! When and if we win, who wants to swap for a bottle of hand-crocheted scotch?

* * *

"Yes! We have all purpose soap, U. S. surplus jumbo three-pound bars (when packed). Case of 25 bars, \$11.50." Thus spake a recent newspaper advertisement. The price figures over 15c per pound. Ouch! To what state has this common laundry soap risen?

* * *

"What We Have to Say About Our Competitors,"—a new book just put out by Leo Kelly, exec v-p of National Sanitary Supply Assn. A small volume but withal very enlightening,—all the pages are completely blank. Proceeding on the theory, we suppose, that if you can't say anything good, you had best say nothing at all.

* * *

Geoff Wood, president of G. H. Wood & Co., Toronto, is also a Canadian movie magnate. As president of Dominion Productions Ltd. of Toronto, he sponsored and produced the first full-length movie feature ever made in Canada, a picture of the north country entitled, "Bush Pilot." It will be released in Canada, U. S. and England soon. A film tycoon in our very midst, by gosh!

* * *

If the disinfectant business ever goes blooey, Jack Varley, Baird & McGuire of St. Louis dynamo, might qualify as a magician's assistant based on his performance at the recent NAIDM dinner in N. Y. All he needs is a union card.



"... who in hell is dis yere Kilroy, Cuthbert?"

...Kilroy gets around!

SO does advertising. But the difference between some people and Kilroy is that some people are choosey where they go. Just like business paper advertising. It just doesn't go any place, but concentrates its attention in specialized fields where the advertiser can obtain the maximum benefit. Not helter-skelter, hit-or-miss, but concentrated and specialized!

Now, if you would like to concentrate some of your advertising in the field of soap products, chemical specialties, insecticides, disinfectants, and the like, we suggest consideration of a publication which specializes in reaching this field, such as

SOAP and Sanitary Chemicals

254 WEST 31st STREET

NEW YORK 1

A.B.C. paid subscription renewal rate for year ending October, 1945—88.4%

